INFO WORLD

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ISO what? *How ISO 9000, the growing global quality standard, is going to affect the way you do business.* **61**

Going remote: *Reports from the front of the Remote Access Wars.* **53**

NT to blaze desktop trail

- Add-ons to bolster usability of Microsoft's robust OS

By Ed Scannell

MICROSOFT CORP. this week will send Windows NT 4.0 to manufacturing with an eye toward delivering the next major upgrade to the company's robust end operating system in September.

But although this release will make NT more competitive in the server arena, IS managers will have a comparatively long wait before enough features are added to NT to make it a rich desktop environment, sources said.

NT 4.0 will incorporate key features designed to improve its overall performance: better scalability for multiprocessor servers, more graphics support for running workstation applications, and the Windows 95 GUI and Internet Explorer for desktop uses.

Although DirectDraw and the OpenGL library will ship with 4.0 right away, the rest of Microsoft's multimedia API set, including support for 3-D graphics, audio, and video, will not be available until a ServicePack release is

App development

Netscape to deploy ORB technology

By Jim Balderston

NETSCAPE COMMUNICATIONS Corp. this week will add another front to its far-ranging war with Microsoft Corp. when it launches an Open Network Environment (ONE) for application development.

▷ Microsoft to release ActiveX to independent standards group. See article. page 24.

In an attempt to get momentum behind the Object Management Group (OMG)'s CORBA object management protocol and Internet Inter-ORB Protocol (IIOP) as a counter to Microsoft's Distributed Component Object Model (DCOM), Netscape will embrace Visigenic Inc.'s object request broker (ORB) technology. (See "Major vendors to pick up ORB from Visigenic," June 3, page 8.)

"Netscape has jumped into the CORBA camp with this announcement," said Mike Kennedy, an analyst with Meta Group Inc., in Boston. "They are trying to rally the CORBA and Java vendors against

Microsoft sidesteps NDS

- SMS 1.2 lacks key NetWare support

By Paul Krill

A FORTHCOMING point release of Microsoft Corp.'s Systems Management Server (SMS), due out with Windows NT 4.0 in September, will provide support for remote control of NT systems for the first time.

But although this feature will be a boost to NT-centric sites, Microsoft has no plans to alleviate one of the nastier integration issues facing network managers today. SMS 1.2, Microsoft's key network management tool for NT, will continue to lack direct support for Novell

SPECIAL **NEWS** REPORT

Windows 95: one year later

- 40 million candles on the cake

By Deborah DeVoe and Ed Scannell

WITH SALES of Windows 95 expected to top 40 million units by the end of August, Microsoft Corp. should have plenty to celebrate when it marks the one-year anniversary of its primary 32-bit desktop operating system.

Although Microsoft appears to have vanquished its desktop rivals, the company's biggest challenge in the coming year will be to clearly distinguish Windows 95 from its more robust Windows NT sibling.

"The strategy for Microsoft now is

Step aside, Windows 95 takes over

1995 OS sales (in millions)	
Windows 95	18,846
Windows NT	2,355
OS/2	1,722

1996 projected OS sales (in millions)	
Windows 95	62,730
Windows NT	8,430
OS/2	1,838

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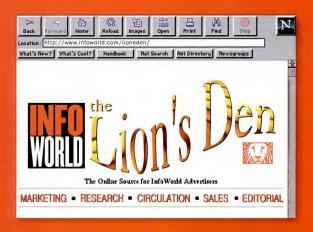
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Antitrust suit against Microsoft

Caldera reopens 'settled' suit, buys DR DOS

By Mark Leon

CALDERA INC., a small software company founded by former Novell Inc. CEO Ray Noorda, is challenging Microsoft Corp. by resurrecting a forgotten operating system and a recently settled lawsuit.

Caldera's suit, filed in U.S. District Court in Salt Lake City, effectively reopens a 1994 Justice Department antitrust action that alleged Microsoft used its muscle to negotiate contracts with PC manufacturers, unfairly locking competitors out of the operating system market. Microsoft settled that case with the U.S. Justice Department out of court last year.

In concert with reopening the antitrust suit, Provo, Utah-based Caldera has bought DR DOS from Novell. This gives Caldera a claim to historical damages against Microsoft, because DR DOS was an early alternative to Microsoft's MS-DOS operating system.

While Noorda was still at Novell, he purchased DR DOS from Digital Research Inc. DR DOS, formerly known as CP/M, actually preceded MS-DOS and was briefly considered by IBM for the IBM PC. But IBM chose MS-DOS, which Microsoft acquired the rights to in 1980.

"The lawsuit appears to be a rehash of the same tired allegations that were resolved a long time ago," said a Microsoft representative. "It's ironic and a little sad that Caldera would file this lawsuit over outdated technology that the market has long since bypassed."

Analysts also questioned Caldera's actions.

"The industry has moved beyond this dispute," said John Rhymer, an analyst with Giga Information Group, in Santa Clara, Calif. "The issue is no longer DOS or even standalone workstations, but distributed computing."

Caldera defended the action.

"As a small company we can bring the suit forward without strong retribution, since our existence doesn't depend on Microsoft technology," said Bryan Sparks, president and CEO of Caldera. "Our current niche doesn't require access to Microsoft APIs," he added, referring to Caldera's other PC operating system, which is based on Linux, a version of Unix.

As for the viability of DR DOS, Caldera plans to bring the product forward in OEM and vertical markets, such as pay-at-the-pump applications for gas stations.

"We do expect to make some money off of DR DOS," Sparks said.

Caldera's purchase of DR DOS, however, must be interpreted in light of the lawsuit.

"Certainly much of the suit is historical in nature," Sparks said. "How do you allege future discrimination? Many of the alleged practices [in the lawsuit] took place during the heyday of DR DOS and MS-DOS."

Caldera plans to integrate DR DOS with its version of Linux and expand OEM and vertical marketing for DR DOS, Sparks said.

The lawsuit could drag on.

"It may take 18 months or more before it goes to trial," Sparks said.

Tracing DR DOS' roots

- ▶ 1976: Digital Research Inc. creates CP/M.
- ▶ 1980: Microsoft Corp. develops MS-DOS based on a CP/M clone.
- ▶ 1988: Digital Research transforms CP/M into DR DOS.
- ▶ 1991: Novell Inc. buys Digital Research.
- ▶ 1994: Ray Noorda leaves Novell and funds Caldera Inc.
- ▶ 1996: Caldera buys DR DOS from Novell.

FROM THE NEWS DESK · MICHAEL VIZARD

Win95 delay to cause NT upgrade crunch

No doubt Microsoft Corp. will be throwing a big bash to celebrate the first anniversary of Windows 95 next month, but maybe it should take a moment to reflect on what might have been. Had the company kept to its original schedule,

we'd all be talking about upgrading from Windows 95 to Windows NT right about now, instead of just getting around to moving to Win95.

Because Microsoft missed the boat on delivering Windows 95 by about a year, and in so doing fell out of lockstep with Intel's processor growth, the gap between when we'll be moving from Windows 95 to NT has been reduced from a demanding two-year period to a completely unrealistic one-year scenario — unless of course Microsoft manages to slide the Cairo upgrade schedule for NT a few months closer to the next millennium.

This is now a critical issue for IS because instead of enjoying a relatively smooth upgrade path from Windows 3.1 to Windows 95 followed by another well-timed upgrade to Windows NT, we're now looking at a series of chaotic upgrades in which just as one department is getting ready to upgrade to Windows 95, another will be moving simultaneously to NT.

It would be an interesting exercise to calculate the effect Microsoft's operating system upgrade schedule is having on the gross domestic product, as hordes of workers struggle to master multiple upgrades. It would also be interesting to calculate the social costs, as harried IS staff try to balance their self-esteem and family obligations against the need to be constantly on-call for support calls that are going to triple as companies deploy Windows 95 and Windows NT alongside Windows 3.1.

Most IS managers know that these problems have been brewing for quite a while. But with the arrival of the NT 4.0 this September, as noted in Ed Scannell's Page One story this week, the screams for help should begin in earnest.

If you think the decent thing for Microsoft to do is acknowledge its complicity in this dilemma, write me at michael_vizard@infoworld.com.

MICROSOFT WORKING ON EXPLORER 3.0 PROBLEMS

Microsoft Corp. is expected to ship Internet Explorer 3.0 by the end of August, but the company is still working on solving glitches in the newest beta version of the software, including installation problems that affect other applications and the underlying operating system, Windows 95 or Windows NT. Among known issues, Microsoft has posted on its Web site that Internet Explorer 3.0 running on Windows 95 installs an updated version of the Windows system .DLL file that causes toolbar buttons to be drawn as disabled in some utilities, including the ActiveX Control Pad, Wordpad, and Paintbrush. Another problem affects Iomega Zip Disk Tools for Windows 95, and similar problems exist with other common .DLL files. Microsoft said the problems will be fixed in the final release of the browser.

HITACHI TO USE ROBOTICS MODEMS

Hitachi PC Corp. will develop, integrate, and brand US Robotics Inc. modems in Hitachi's notebook PCs, company officials announced this week. Hitachi officials said the alliance will help users avoid modem-related installation and configuration problems as well as communications errors. Within 60 days Hitachi will begin integrating the US Robotics modems in all its notebooks, starting with the C-Series and M-Series, but prices will not change, the officials said.

VINES TO GROW METERING SOFTWARE

Banyan Systems Inc. next week will introduce StreetLegal, software-metering and licensing software for the Banyan Vines OS, as well as Web-based calendaring software, expected to be called Calendar WebView, said sources familiar with the announcement. StreetLegal was licensed from LANShark Systems Inc., and Banyan had expected to begin offering it within copies of Vines in June. Banyan is also expected to unveil an updated TCP/IP applications suite as well as new remote-node LAN software, sources said.

CRYSTAL FORMS WEB PARTNERSHIPS

Crystal, a division of Seagate Software Information Management Group, will this week announce Web strategy partnerships with Microsoft, Informix Software Inc., and Allaire Corp. Microsoft, which already ships Crystal Reports with Systems Management Server, will bundle Crystal Reports with three more applications.

BRIEFLY NOTED: ▶ **NORTHERN TELECOM INC.** will add integrated modem capability to its Magellan Access WAN switches. The company is offering cards with eight individually insertable modems for asynchronous dial access. Nortel also introduced the Magellan Access Integrator, a device that connects to the WAN switch to provide data, voice, and fax integration over frame relay. The company will also resell Motorola's Vanguard frame relay access device for use in WANs with its Magellan switches. ▶ **ASTRATEK INC.**'s Visual LAN Probe can display application-level protocols in a format that developers can understand, showing a conversation between a client and server. The debugging and performance monitoring software, available now for Windows NT, can display network information from all layers of the protocol stack from the frame layer to the application layer. ▶ **THE EXCELMACRO/LAROUX** macro virus — the first to infect Microsoft Excel files — affects Excel 5.x and 7.x documents under Windows 3.x, Windows 95, and Windows NT, and creates a hidden, blank worksheet that attaches itself to Excel files but does not appear to damage data. It can be spread via e-mail attachments, floppy disks, and files exchanged over networks and intranets. ▶ **IBM**'s second-quarter earnings dropped about $400 million to $1.3 billion, compared to last year's second-quarter earnings of $1.7 billion.

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Pages 82–91

THIS ISSUE

Products compared in this issue

Internet firewalls
- CheckPoint Firewall-1 2.0
- CyberGuard Firewall 2.1.2
- Gauntlet Internet Firewall 3.1

■ Motorola's PC Card fax/modem will bring high-speed wireless connectivity to Apple PowerBooks, *page 56*

Shockwave will get digital audio, page 29

Getting a pixel replaced isn't a pretty procedure, page 58

Sears adjusts to compete in a changing world, page 66

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Fusion's Web site builder has 50 site style templates

By Chris Jones

NETOBJECTS INC. next week will announce Fusion, a Web page design and management system that uses a template-based approach to create Web sites with a consistent style and structure.

Fusion includes an integrated set of modules, called SiteArchitect Editor, PageDraw Editor, SiteStyles Manager, SiteAssets, and SitePublish, that provide a drag-and-drop environment for integrating text and graphics onto pages and publishing directly from databases and spreadsheets. Navigation and link management is automated across

Corp.'s FrontPage and Netscape Communications Corp.'s Gold with LiveWire Pro can be used to build Web sites, but analysts said Fusion takes a different approach.

"It's the first system that starts with the assumption that you want to design a site first and then fill in the structure rather than build it brick by brick with separate pages," said Craig Cline, editorial director for Seybold Publications Inc., in Foster City, Calif.

NetObjects will also announce this week co-marketing agreements with Sun Microsystems Inc.'s Java-Soft division and Netscape, both of

NETOBJECT'S FUSION *has a SiteArchitect to drag and drop the hierarchy of Web site pages.*

which have endorsed NetObjects' method of integrating Java applets in Web sites. When a user opens an applet in Fusion, it brings up an interface that lets users set parameters for its use. Users said the system could improve collaboration.

"We were looking for something that was easy to work with so we can throw more people at a project," said Tim Gillerlain, a Web designer at Design Media, in San Francisco.

the site, and the package has 50 site styles that are useful as templates.

Shipping in September, Fusion will run on Windows 95 and Windows NT and will cost $695.

HTML editors such as Microsoft

"You get overwhelmed by the number of pages you put out, and this is a way to check everything you're working with."

Fusion can be downloaded at http://www.netobjects.com.

Novell offers GroupWise 5.0 beta, free move to upgrade

NOVELL INC. has released an open beta version of GroupWise 5.0 and expects to have a final release-to-manufacturing version ready by the end of September.

GroupWise 5.0, formerly code-named GroupWise XTD, will be targeted at the GroupWise installed base and at Microsoft Corp.'s Mail and Lotus Development Corp.'s cc:Mail customers.

When Microsoft shipped its Exchange Server replacement to Microsoft Mail this past spring, Novell announced a competitive upgrade to move users for free to GroupWise instead.

"The Microsoft Mail customer

base is in pain," said a Novell representative. "We've known that for a few years, and Microsoft has known that for a few years."

The beta version is also intended to help existing customers run pilots of the upgrade to test existing applications with the product. Although the upgrade's code is likely to change a bit before its release to manufacturing, the new features are now frozen.

The most significant new feature in Version 5.0 is the document management system that will be integrated with Novell's messaging and groupware system.

— *Jessica Davis*

AT&T to help develop NC standards

■ Company hopes to make network services easily available

By Jessica Davis

AT&T is working with companies that are developing network computers (NCs) to develop standards for locating resources, downloading software, and performing other operations, such as registration, on the network. AT&T believes that such standards will be burned into the NC at the firmware level.

"That's something we're working on with the people [who are] developing the devices," said Tom Evslin, vice president for AT&T's WorldNet Service. "Those devices will have limited intelligence and flexibility; they'll depend on certain things on the network being just so and will have to make a lot more assumptions about the network." For example, a dial-up connection could be burned into the NC's firmware and take the user directly to AT&T's Internet service, WorldNet, he said.

But some analysts were skeptical, saying that both businesses and consumers would require more flexibility. Other options could provide that kind of flexibility better than firmware, analysts said.

"Instead there would be some kind of flash memory or RAM that

you can keep a charge on to keep your preferences," said Tom Rhinelander, an analyst with Forrester Research Inc., in Cambridge, Mass.

Evslin and Rhinelander agreed that, although the NC may well fail in the home environment, it could

be useful for some applications within commercial environments.

"I don't really see them in residences, and I can see them more quickly in businesses as a supplement to existing computers, going on desks where computers aren't [located] today or where they have

limited value," Evslin said.

Forrester also dismissed NCs for the home, saying a 28.8Kbps speed and the software-for-rent model will never work. But the market research company said that as much as 30 percent of office environment

PCs could be replaced by NCs.

"We see there is definitely a fit in the business environment," Rhinelander said. "There is a network with enough speed there."

Companies working on NCs include Oracle Corp., Sun Microsystems Inc., and IBM.

Netscape readies 'net calendaring offering

By Jessica Davis

NETSCAPE Communications Corp. last week announced that it would enter the enterprise scheduling market by year's end with a product of its own.

The announcement came in a press release that also announced the Internet Calendaring Summit, a multivendor meeting held at Netscape's Mountain View, Calif., headquarters.

Netscape organized the meeting to spearhead an effort to define Internet calendaring protocols that would then be submitted to the Internet Engineering Task Force (IETF) for approval.

Netscape officials would not comment on whether their new Internet calendaring product, due by year's end, would come from an internal development effort or an acquisition.

Five separate specifications, presented by five different calendaring vendors, were offered for review at the Summit.

■ Internet Calendaring Access Protocol was presented by Lotus Development Corp. This access protocol supports the vCalendar data format specification created by the

Versit Consortium, made up of Apple Computer Inc., AT&T, IBM, and Siemens Nixdorf Informationssysteme AG.

■ Scheduling Wide Area Transport Protocol was presented by Phase2 Software Corp. The specification includes both a transfer protocol and a data format.

■ Simple Scheduling Transfer Protocol was presented by On Technology Corp. This specification also includes both a transfer protocol and a data format.

■ Internet Calendar Framework was presented by Microsoft Corp., including both a data format and transfer protocol.

"There was overlap, but it was also evident that folks were focusing on different parts of the problem," said Mark Szelenyi, a client product marketing manager at Netscape and one of the company's representatives at the Summit.

"This group will develop a standard, and the first step in that process is becoming an IETF working group," Szelenyi said.

Membership in IETF working groups is open, Szelenyi added.

Documents are expected to be submitted to the IETF in the next

six to eight months, according to Szelenyi.

"I'm confident that the majority of companies represented at the Summit will support the standard that emerges," Szelenyi said. "It looked like there was a willingness to make consensus happen."

News of the Internet Calendaring Summit, leaked prior to the event, caused some controversy. An e-mail message from an IETF area director to a Netscape executive vice president criticized Netscape for its efforts at "standardization by press release" before going through the entire IETF process.

Netscape refuted these charges, saying that the company was introducing other vendors to the IETF process.

More than 20 companies accepted Netscape's invitation to the Summit. The participants included Banyan Systems Inc., Clear Blue Network Systems Inc., Corporate Software & Technology Inc., FTP Software Inc., Hewlett-Packard Co., IBM, Lotus, Microsoft, NetManage Inc., Novell Inc., Now Software Inc., On Technology, Software.com Inc., TeamWare Inc., and the Versit Consortium.

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Microsoft Office 97 will offer intelligent help

■ Interactive wizard adapts to users

By Chris Jones

MICROSOFT CORP.'s release of Office 97 this fall will be a major upgrade to the architecture and interface of the suite, with a new Office Assistant help wizard and three other shared components that integrate functionality between applications.

The four new shared components include the Office Assistant, the OfficeArt tool for drawing, customizable commands and toolbars, and support for the IntelliMouse point-and-click device.

Analysts said component sharing will change the way applications are used.

"Office 97 mixes and matches the component entry at a level that we've never seen before," said Harry Fennick, an analyst with Zona Research Inc., in Redwood City, Calif. "Soon enough, every tool will be available inside every application. You'll only launch the piece of the application you want rather than the whole application. It's a very good architectural decision."

The Office Assistant, an animated Einstein character or any of nine other figures, provides help and tips tailored to individual users' needs across all the applications. If a user masters a spreadsheet procedure, for example, the assistant will stop offering tips for that function.

The social intelligence research behind the wizard was conducted by two Stanford University professors who said that in the future, inference engines will be able to gather even more information on users' habits.

"Systems will eventually be able to gather information on how people think about problems and present solutions modeled on that,"

said Clifford Nass, a professor of communications at Stanford, in Palo Alto, Calif. "Does the user like definitive answers or do they like a wide range of choices, for example."

Dennis Tevlin, group product manager at Microsoft, in Redmond, Wash., said the new wizards should

MICROSOFT OFFICE 97 has an animated Office Assistant to offer help and tips across all of the suite's applications.

help reduce IS support costs by reducing the number of calls for help from end-users.

"It's a way to address usability," Tevlin said.

To customize application tools, users can drag and drop toolbar items into menus and vice-versa. ActiveX controls — form controls, a PowerPoint animation player, and others — will be shipped with the suite, and new controls written in Visual Basic and Java can be added as they evolve.

Independent software vendors could take advantage of the component integration by developing vertical applications that link to Office applications and access all the component parts of the suite.

Currently, Internet Explorer runs Office applications in a combined interface, with toolbars from both programs on the screen. When ActiveX and other components are added to either application, they could be linked together for more integration.

System architecture

Intel outlines Connected PC initiative

By Tom Quinlan

INTEL CORP. laid claim to the Internet last week, taking the concept of thin clients head on and, in the process, attempting to establish itself as a major focal point of software design.

At its first Intel Internet Media Symposium last week, the chip manufacturer presented its answer to the idea of the Network Computer model, stressing the Connected PC initiative and the idea of hybrid multimedia applications that will require the massive processing power of Intel.

Instead of trying to send massive amounts of data across the Internet using the relatively low bandwidth of telephone lines or even ISDN service, Intel instead is promoting the idea of standard PCs handling most of the processing power, with updates and interactive content coming across the Internet.

"Solutions that have been proposed to take advantage of the Internet have been based on a myth," said

Andrew Grove, Intel president and chief executive officer, in Santa, Clara, Calif. "And the myth is that the bandwidth necessary for supporting content that resides on the Internet is here now or will be here shortly."

This barely veiled reference to the Network Computer architecture clearly drew the line between Intel's vision of the future and another vision ruled by relatively weak but inexpensive and easy-to-use thin clients.

Instead, Intel wants to foster a development climate for ISVs that combines the power of the PC with the immediacy of the Internet, Grove said.

According to Intel officials, the hybrid concept is backed by 44 developers — including Adobe Systems Inc., Macromedia Inc., Sony Corp., and Cisco Systems Inc., and tacitly supported by Microsoft Corp. — and will see applications by the end of this year at the latest.

► **According to Intel officials, Microsoft and Intel worked closely before Intel launched its Internet initiative.**

Symposium attendees gave Intel a much better than even chance of succeeding.

"It has to be utilized to get over the bandwidth problem," said Rob Enderle, an industry analyst with Santa Clara, Calif.-based Giga Information Group.

Existing technology allows for applications to interact with Internet-based applications and data, Intel officials said. What Intel is offering is a seamless integration of the two. To accomplish that, Intel has established three developer programs under the umbrella of the Internet Media Developer Support Program, which include a Digital Video Disc authoring program, an MMX multimedia processing technology developer support program, and an Internet media development tools program.

Ephraim Schwartz and Luc Hatlestad contributed to this article.

Packard Bell NEC updates PowerMate line

By Carolyn A. April and Jackie Poole

IN ITS FIRST ACT as an officially merged company, Packard Bell NEC Inc. unveiled last week a completely revamped PowerMate corporate desktop line with hardware and software management tools that the company believes will attract corporate buyers.

"We hope to provide IS managers with the latest in management controls," said Benny Alagem, chairman and CEO of the newly formed corporation, in Mountain View, Calif.

The product line integrates the NEC division's PowerMate Client Manager Software Suite, which includes McAfee Associates Inc.'s VirusScan and WebScan, Cybermedia Inc.'s First Aid95 Deluxe, and

Intel Corp.'s LANDesk Client Manager software. According to company officials, the management programs will attract corporate buyers because it reduces the cost of ownership, but one industry analyst sees a bigger challenge for NEC.

"The challenge for them under the new company is to hold their position in the commercial market, because they don't have a strong base," said Bill Zinmeister, an analyst for International Data Corp., in Framingham, Mass.

The PowerMate series scales from 100-MHz Pentium systems to as high as 200-MHz Pentium Pro systems and will cost between $1,175 to $3,700. The entry-level PowerMate Ve will have a 100-MHz chip, 8MB of RAM, a 1.2GB hard drive,

and Windows 3.11 or Windows 95.

At the top of the line, the PowerMate Professional will feature a 180-MHz or 200-MHz Pentium Pro, 32MB of Extended Data Out RAM, a Matrox Millennium PCI accelerated 3-D graphics card with as much as 4MB of Windows RAM, an eight-speed CD-ROM drive, and a 2GB SCSI hard drive. The system will be offered with Windows NT 3.51, upgradable to Windows NT 4.0 when it ships.

Both the Professional model and the PowerMate Performance model, which offers either a 166-MHz or 200-MHz Pentium processor, will also include NEC's MagicEye monitor, which notifies a user of overheating problems.

The products will ship in August.

IBM unveils its latest low-price desktop PC

By Carolyn A. April

KEEPING PACE with other PC vendors' aggressive pricing strategies, IBM PC Co. last week unveiled an entry-level desktop computer priced at $1,198.

Available now, the PC 340 is the newest member of Big Blue's low-to mid-range corporate PC 300 line. The system is offered in two

models, sporting either a 100- or 133-MHz Pentium processor, 8MB or 16MB of RAM, and an 850MB or 1.2GB hard drive. IBM officials said the PC 340 is targeted at budget-conscious corporate customers who still need high performance and network manageability.

IBM's cut-rate pricing positions the system against other recently

announced PCs, most notably Compaq Computer Corp.'s entry-level Deskpro 2000, which carries a price tag of $1,100. (See "Compaq revamps corporate desktops and debuts new lines," July 22, page 6.)

Other IBM PC 340 features include

■ support for high-speed 64-bit graphics, with an enhanced PCI

Busmaster local bus IDE controller and 1MB of Video RAM, expandable to 2MB;

■ IBM PC Networking Tools, a combination of software and hardware that makes it easier for users to install, operate, and maintain networked PCs;

■ Windows 95 or Windows 3.1, Lotus Development Corp.'s SmartSuite, and Intel Corp.'s ProShare videoconferencing software preloaded; and

■ optional 256KB of Level 2 cache.

For the record

The chart (page 32) accompanying the July 15 article "NEC, Digital, HP readjust notebook offerings" (page 29) listed an incorrect model number for a Toshiba notebook. The chart should have listed the Toshiba Satellite Pro 420CDS, with an 11.3-inch dual-scan screen, 8MB of RAM, and 810MB hard drive, for a price of $2,999.

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IBM hits hurdles at Olympics

■ Complaints abound about the relay of information

*By Ed Scannell
and Ted Smalley Bowen*

IBM'S REPUTATION as a provider of world-class IT systems suffered a major setback last week as a result of numerous systems failures that have led to sluggish updates of Web sites and delayed postings of scores after many Olympic events.

For example, an input-queue problem with IBM's mainframes was partially responsible for the failure to provide journalists with immediate results. But with some coding fixes, IBM programmers have fixed that problem, an IBM representative said.

One IBM official, who did not want to be identified, pointed to the late physical completion of some of the venues as a major contributing factor to IBM's problems, noting that in some cases IBM was left with as few as two days to set up IT infrastructure. Systems of this complexity normally require 60 to 90 days to set up and test, according to the IBM official.

IBM officials also attributed some of the slow results to the fact that scores must be cleared by that event's venue manager, a process that can exceed 30 minutes, before they can be transmitted. To help speed these transmissions, IBM has switched from sequential to broad-cast transmissions by recoding the mainframe's queuing system. IBM officials also attributed some of the delays to the slow modem lines used by some agencies.

In addition to the gremlins haunting the scoring systems, there

WIDESPREAD COMPLAINTS about IBM's Olympic Web site and other systems are not expected to dent corporate sales.

have been widespread complaints about how slowly the 1996 Summer Olympic Games' Web site is updated. The site was designed to give up-to-the-minute information about availability of tickets, along with other informational services.

"I was trying to find out about the availability of tickets and was led to believe there were dozens left, only to find out later that match was sold out," said John Anderson, an antique dealer in Raleigh, N.C.

Others have complained about the reliability of IBM's Info '96 system, a touchscreen PC running IBM's OS/2 Warp Connect, which accesses a range of information.

"These [Info '96] terminals are just crashing all the time. People here are beginning to call them Info '97 because that is probably when they will be ready to work," said an assistant with an independent production company.

IBM officials last week claimed that most of the problems affecting the approximately 1,800 Info '96 kiosks had been addressed. Yet users continued to note difficulties, particularly with e-mail and the legibility of printouts generated from the kiosks.

What the long term impact this poor showing at the Olympics will have on IBM remains to be seen.

"IBM's resources is a matter for its board, but IBM has had a high level of exposure for embarrassment on the world stage," said Bob Djurdevic, president of Annex Research Inc., in Phoenix. "They put themselves there by making performance claims before implementing anything."

IBM tests Web technology at the Summer Olympics

*By Ed Scannell
and Ted Smalley Bowen*

AS PART OF ITS IS operations at the Olympic Games, IBM is testing two new technologies that promise to automate the building and linking of Web pages and make it easier to run multimedia applications across the World Wide Web.

Developed internally by IBM, Womplex is an objected-oriented tool that creates and maintains all the links to all the objects associated with pages that users are creating or searching for on the Internet.

"Users will no longer need to hard-code all their pages. In the past, if users took out one object [from a page] they would lose all the links for that object," said Jose-Luis Iribarren, manager of IBM's Olympic and Sports Internet Systems, in Atlanta.

IBM's Internet technologies are piquing some interest among IS managers.

"If they can do that, we'd be interested. But there's the question of how they maintain the links and what I need to have on people's desktops to support this," said Frank Petersmark, assistant vice president of IS at Amerisure & Co., in Southfield, Mich.

Womplex, which sits on top of IBM's AIX OS, is being used with IBM's RS/6000 SP parallel systems. IBM expects to deliver a version of the product to the commercial market, most likely for AIX, by the end of this year, Iribarren said.

It is also likely that IBM will deliver versions of the technology for its other major software environments, such as AS/400 or OS/390, but Iribarren declined to say when that would be.

A second technology IBM is using at the Games, called Bamba, allows users to use video and audio streaming over the Internet. The technology can compress four times as much video and audio data than the MPEG and Audio Visual Interleave standards can, according to IBM officials.

"Perhaps the most important aspect of this [Bamba] is that it can be used comfortably with 28.8Kbps modems, which is what many users have," Iribarren said.

Bamba is also expected to be released as part of a commercially available product by the end of this year or early in 1997, but Iribarren declined to give specifics on how it would be implemented with such a product.

OLAP engine

Express yourself on the Web

By Mark Leon

ORACLE CORP. last week announced a 64-bit version of the Oracle Express multidimensional database and online analytical processing (OLAP) engine, which lets users perform complex analyses over the World Wide Web.

Oracle Express Server 6.0 for Windows NT comes ready to receive HTTP server requests and can publish HTML pages on the Web. The 64-bit architecture and multithreaded design deliver performance enhancements, and new client software makes it easier to use and deploy.

Express Server 6.0 brokers OLAP requests over the Web with the Express Web agent. The engine processes the request with the database and publishes results in HTML format.

Users said the Web features were critical for quick access.

"For time-series data alone we process about 500MB per day. This makes access about as close to real time as you can get," said Browning Rockwell, president of Trade Compass Inc., in Washington.

Webmasters can use the Oracle Express Server toolkit to embed OLAP data in HTML pages.

"To provide all the analytical capabilities of Express Server over the Internet, we support standard Web browsers and interoperate with third-party Web tools like Java and Front Page," said Dave Menninger, director of product marketing. The 64-bit architecture gives the software the capability to address massive amounts of data in memory.

Redwood Shores, Calif.-based Oracle added new client support for desktop applications. Users can, for example, choose to receive server data in Excel spreadsheets or other popular applications.

Express Server 6.0 will ship in August. Oracle will release Unix and Windows 95 versions this fall. Prices will start at $3,995 per user.

Bay Networks' CEO hands in resignation

By Stephen Lawson

BAY NETWORKS INC. said last week that its president and CEO, Andy Ludwick, has decided to resign.

Ludwick helped to found Synoptics Communications Inc. in 1985 and has led Bay since its creation out of the 1994 merger of Synoptics and Wellfleet Communications Inc. No date was given for his departure and no successor was named.

Ludwick's resignation will give the company a chance to close the book on a difficult period marked by culture clashes, missed opportunities, and poor performance, observers said.

"Bay Networks is finally implementing the merger," a source close to the company said.

Bay had failed to deliver on its product strategy largely because of Ludwick's shortcomings as a manager, the source added.

By contrast, Wellfleet's leaders

Andy Ludwick: To go.

were pragmatists and happy to fly by the seats of their pants. Lingering problems following the merger and poor choices for key leadership positions have held up Bay's pursuit of a coherent lineup of Asynchronous Transfer Mode switching products in the backbone and frame switches for workgroups, sources said.

Bay, located in Santa Clara, Calif., has also failed to grab much of the growing Internet router market from Cisco Systems Inc., which supplied approximately 80 percent of the routers that make up the backbone of the global network of networks, according to Don Miller, an analyst at Dataquest Inc., in San Jose, Calif.

Miller said Bay recently carried out a reorganization to address this market, but more significant changes are on the way.

"I don't think they're going to survive alone," Miller said.

Lucent Technologies Inc., with which Bay formed a partnership for multimedia WANs last week, is a possible suitor, Miller said.

Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J., said Bay's problem was a matter of branding rather than technology, and that the company has failed to sell itself to users.

"Bay has a technological solution to every real networking problem the user will face in the next 10 years," Nolle said.

It remains for Ludwick's successor, probably an outsider, to market those solutions effectively. Nolle said recent examples of top-end overhauls at other large technology companies, such as Novell Inc. and IBM, do not bode well for Bay in the short term.

Last week Bay released quarterly earnings that disappointed Wall Street analysts. The company reported net income for its fiscal fourth quarter, ending June 30, of $55,144, down 1.4 percent from $55,951 reported a year earlier.

Band-width is tight. ATM sounds nice. But it also sounds pretty darn expensive.

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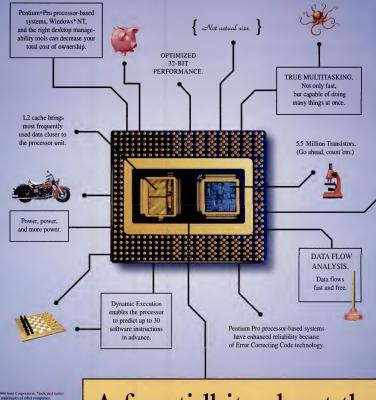
Well, with all respect to the status quo, IBM now unveils the new 25 Mbps ATM Workgroup Solution. It comes complete with workstation adapters, giving you an immediate boost in bandwidth, with plenty of room to grow in the future. And it all comes at the refreshingly low price of $495 per connection.

So why just dream about getting an affordable ATM solution when you can install one today? See your nearest IBM reseller or call us at 1 800 IBM-2468, ext. DA 130, to learn more. Or, if you prefer, you can visit our Web site at www.raleigh.ibm.com/netad.html for all of the details. We have lots of information to share. And the good news is, we can get it to you fast.
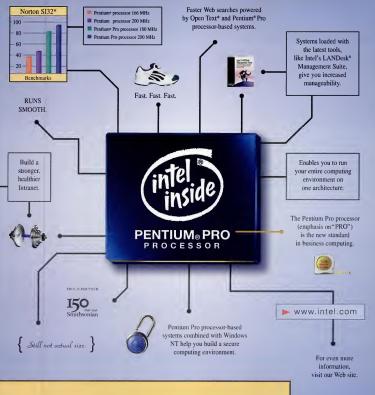
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Windows

is how to take the two products — Windows 95 and NT — and get them to market where their emphasis isn't confused," said Michael Gartenberg, research director at Gartner Group Inc., in Stamford, Conn. "[Microsoft's] goal is to maintain two distinct platforms — high-end and broad-based — and make sure they are interoperable and very compatible."

Microsoft is pushing just that desktop message, currently positioning Windows 95 as the OS of choice for everyday applications, whereas NT is aimed at power users, said Jonathan Roberts, director of marketing for Windows at Redmond, Wash.-based Microsoft.

"We're saying that Windows 95 is the easiest way to run 32-bit applications," Roberts said. "It supports a wider range of hardware and requires less RAM. Its design point was for greater compatibility. NT is simply a more powerful OS. Its design point was for greater reliability, scalability, and security."

Microsoft, however, is moving toward merging the features of the two OSes using NT as the core, Roberts said. For example, the next iteration of NT, code-named Cairo and due to enter beta testing in 1997, will include Plug and Play support and power management, features currently available in Windows 95, he said. The two will also share a common device driver model, announced in April and expected to be part of devices early next year.

"We're on a path to share as much technology between the OSes as we can," Roberts said. "They're sharing core components — the user interface, object model, Win32 API, and Windows driver model. The differences between the two will become blurred."

Looking five years ahead, Roberts said Microsoft primarily will be working off the NT kernel but will continue to offer a segmented OS series.

The company is also working to ease migration from Windows 95 to NT. Currently, many applications have to be reinstalled, but Microsoft hopes to solve migration difficulties by improving installation on both platforms, delivering more compatible technologies such as the Windows driver model, and moving the 95 registry over to the NT registry, which is expected to be completed by Cairo's release, Roberts said.

According to Microsoft, this gives corporate IS managers plenty of time to gear up for Windows NT.

"The reality of corporate migrations is that it's a long-term process," Roberts said. "There's a large percentage of the installed base where a move to NT is not a realistic option [right now]."

Windows 95 is currently outselling NT by a wide margin and, for now, Microsoft continues to be committed to Windows 95 development, assuaging corporate concerns about the future of the OS.

In fact, many companies seem to be embracing both Win95 and NT to address varying requirements.

"We felt like there was a place for both OSes in our company," said Lesa Kastanas, systems officer at Charlotte, N.C.-based First Union

NT, said Peter Bavoso, vice president of MIS.

"With statements Microsoft has made, it's our belief that NT will be the more robust desktop [over] time," Bavoso said.

Laptop users, however, have been migrated to Windows 95 — a trend seen at many companies due to its better mobile support.

Peeking into the future of Windows 95, IS managers can expect a major upgrade, code-named Memphis, to enter beta testing in 1997, Microsoft's Roberts said.

In the interim, Microsoft will also move to make Internet Explorer

IBM TOASTS ITS OWN MILESTONE

Although Microsoft Corp. will be calling in the bands next month to celebrate Windows 95, IBM's celebration of another milestone will be a much more subdued event.

Fifteen years ago this August, IBM jump-started the PC revolution by introducing the first IBM PC — legitimizing the PC for the business community. Recognizing the need for some sort of PC offering, but dubious about its long-term importance, IBM created its first system primarily using off-the-shelf components, including an OS from then tiny Microsoft and an 8/16-bit processor from Intel Corp.

Since then, IBM's clout has steadily been eclipsed as a result of the Wintel duopoly it gave life to. After reaching market-share heights of nearly 70 percent in the early 1980s, it now holds less than 10 percent of the PC marketplace, according to International Data Corp., in Framingham, Mass.

Now the $60-billion-a-year-plus behemoth sees a glimmer of hope for a reversal of fortune, based on the Net-work Computer (NC) architecture.

The NC design effort — led by Oracle Corp. and backed by Apple Comput-

er Inc., Netscape Communications Corp., Sun Microsystems Inc., and Silicon Graphics Inc., in addition to IBM — not only eschews technology from Intel and Microsoft, but seeks to turn back the clock to the time when the real processing power resided in the hands of massive mainframes. Without local storage and with limited processing power, NCs will be completely server-controlled, allowing users to download applications on demand.

IBM needs to step carefully, however, as history has shown that most users are quite happy using the Intel and Microsoft technology widely available from more than 600 PC vendors. As a result, IBM is positioning its thin-client strategy as simply one component of its overall computing strategy, which still relies heavily on Intel and Microsoft technology at the PC level — a smart move, according to many industry analysts.

"Corporate users are kind of [like] hostages; they need a PC to get [a] job done," said Tom Rhinelander, an analyst at Forrester Research Inc., in Cambridge, Mass.

— Tom Quinlan

National Bank Inc., which will be migrating about 30,000 PCs to Win95 and NT 4.0. "We didn't want to give the average user more horsepower than they really needed."

By giving Windows 95 to basic productivity users, First Union can leverage some of the hardware it already owns; using NT 4.0 would have required buying new PCs, Kastanas noted.

Windows NT will be brought in to replace OS/2 for most groups using mission-critical, vertical applications that require its security and robustness, Kastanas said. First Union will still have to support two OSes, but they will now have a common user interface, she added.

Darby Group Companies Inc., a medical supply company in Westbury, N.Y., also plans to migrate from Windows 3.1 to a mixed environment, although the majority of its 1,200-plus users will be moved to

4.0., due in 1997, the primary user interface for Windows 95. (See "Wintel weaves Web strategy: Explorer 4.0 is coming," July 8, page 1.)

"Seamless integration of Internet access and viewing the entire system as if it's a Web page — that's a direction we're taking," Roberts said. "Our goal over time is to integrate Web access capabilities as tightly into the OS as we can. And we want to have one consistent way of viewing information."

Taken in concert, analysts said Microsoft's efforts are likely to continue to marginalize rival desktop operating systems.

"Windows 95 is an overwhelming success by any measure," Gartner Group's Gartenberg said. "I would definitely say that the OS war is over, and that Microsoft has emerged victorious. Others OSes will play in market segments, but five years out, [it's] 32-bit Windows."

Explorer, Navigator in browser beta battle

By Dylan Tweney

VERSION 3.0 OF Microsoft's browser presents the first significant challenge to Netscape Communications Corp., matching Navigator 3.0 feature for feature — and it's free.

But should your company standardize on Explorer 3.0 or Navigator 3.0? Neither — unless you've got only a few Windows 95 or Windows NT desktops to upgrade. Both Netscape and Microsoft plan to release early next year 4.0 versions of their products, code-named Galileo and Nashville, respectively. Nashville will become part of Windows, so upgrading to Internet Explorer 3.0 now mostly means extra work for IS. And if you're using Navigator 2.0, upgrade to 3.0 only if you need its multimedia, telephony, and enhanced Java features.

We compared Netscape Navigator 3.0's beta 5a release and Internet Explorer 3.0's beta 2 release. Both were stable. Internet Explorer now supports frames and other Netscape HTML extensions, runs many Netscape plug-ins, and sports an improved interface. Netscape Navigator has added multimedia and telephony features, new HTML tags, and enhanced security features (matched by Explorer 3.0).

Mail, news, Virtual Reality Modeling Language (VRML), telephony, and Java features are installed with the basic version of Navigator 3.0, making it much easier to install or upgrade than the beta of Explorer.

Once installed, Explorer beats Navigator for usability with its easily customized toolbars. Navigator requires using a dialog box to add or remove toolbars.

Navigator 3.0 betas are available for Win95, NT, Macintosh, and Unix. Explorer 3.0 is currently available only for Win95 and NT, and it sports a radically different interface than 2.0.

A trial version of Navigator 3.0 is at http://www.netscape.com. The Navigator download is 6.1MB; a slim version (without telephony, chat, and VRML) is 3.5MB.

Explorer, at http://www.microsoft.com/ie, is a 4.6MB download, but that's just the basic browser. The install routine takes longer than Navigator's and requires a reboot. The mail and news module, VRML support, telephony add-on, and Java support total 6.6MB and must be individually installed.

Both companies offer utilities to customize and automate the installation of their browsers on a large number of desktops.

Insignia ports Ntrigue to NC

■ Move will push Windows to NC front

By Mark Leon

DESPITE THE BEST efforts of Oracle Corp. and other archenemies of Microsoft Corp., the Network Computer (NC) of the future may end up running Windows rather than Java.

Insignia Solutions Inc. is working with developers to port its upcoming Ntrigue Net client software to the NC.

"The problem with NC is that it just runs Java and ActiveX, and it can't get access to Windows applications," said John Chang, Insignia's vice president of marketing.
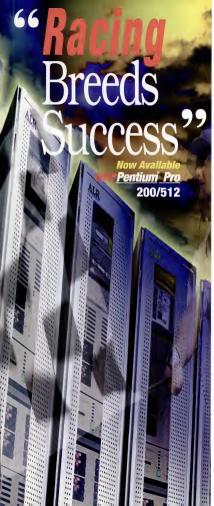
"But we are working with HDS Network Systems Inc., Hewlett-Packard Co., and Wyse Technology Inc. to provide Windows applications to these NCs," Chang added.

In August the company will ship versions of its Ntrigue Net software that can deliver Windows applica-

tions to Unix and Macintosh desktops via the Internet.

The new clients run with Ntrigue, Insignia's Windows NT server, which is an OEM version of Citrix System Inc.'s WinFrame NT server.

The clients support Citrix's Intelligent Console Architecture and X-protocols and will work over standard modem connections.

Users can either launch Ntrigue Net from within a browser or run it as a stand-alone application.

"[Insignia is] in an extremely good position to deliver applications over the Internet," said user Kenneth Schwartz, clinical instructor in neurology at the Baylor College of Medicine, in Houston.

Users can download beta versions of the client software from Insignia's Web site at http://www.insignia.com. It will cost $200 per software client.

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Xylan, IBM team up to turn on switch market

By Stephen Lawson

UNDER THE TERMS OF AN agreement announced last week, IBM and Xylan Corp. will form a joint-development organization in order to market each other's switching products.

IBM agreed to order $30 million worth of products from Xylan, a Calabasas, Calif.-based company that makes products for Ethernet, Token Ring, FDDI, and Asynchronous Transfer Mode (ATM) LAN switching solutions. IBM will sell Xylan products under the IBM name, and Xylan will label some IBM products with its name. Both vendors will have the right to manufacture each other's campus switching products.

Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J., said the agreement between the companies brings together network-layer switching technology from IBM and transport-layer products from Xylan.

"This is potentially the killer deal of the '90s in switching," Nolle said.

IBM's Switched Virtual Networking (SVN) and Multiprotocol Switched Services (MSS) offer a way to map Ethernet data flows in workgroups to an ATM network backbone over any protocol. These technologies can offer the speed of ATM and the flexibility of routing at the core of an enterprise network, according to Nolle.

With Xylan's workgroup switches and virtual LAN capabilities, the companies could offer a powerful combination, Nolle added.

"The two can build a world-class switched network architecture, but the deal doesn't address whether they will be able to position it well," Nolle said.

IBM has had difficulty marketing SVN and MSS, because they are so complex, Nolle said.

The deal will help to fill out IBM's portfolio, but there is danger in such a partnership for a small company such as Xylan, said Don Miller, an analyst at Dataquest Inc., in San Jose, Calif. If the partnership falls apart, the smaller company can lose a significant portion of its revenue overnight.

APPLE, FORE TO BUILD API FOR ATM APPS

By Stephen Lawson

FORE SYSTEMS INC. and Apple Computer Inc. announced a licensing agreement last week under which they will develop a common API for native Asynchronous Transfer Mode (ATM) applications that will run on Unix and Macintosh systems.

The agreement is initially aimed at providing applications that run over high-speed ATM networks for the entertainment and broadcast industries.

Los Angeles-based Cinebase Software Inc., maker of the Cinebase asset-management system for distributing and archiving broadcast images, is expected to be the first developer to use the API.

Fore said it is developing the API, which will be based on the X Open standard, to jump-start the market for ATM-optimized applications for Unix and Macintosh.

Applications written with the API will work with Fore's ForeRunner ATM switches and adapter cards using Apple's ATM Middleware.

Native ATM applications have been developed for Windows operating systems using the WinSOCK standard.

"Fore is at the leading edge in this industry and is doing this to keep that status," said Frank Dzubeck, an analyst at Communications Network Architects Inc., in Washington.

Warrendale, Pa.-based Fore pioneered ATM technologies, and no other company has yet matched the company's product set for end-to-end ATM networks, according to Dzubeck.

Industries that are heavily invested in the Macintosh platform currently run multimedia applications over slower network technologies, with poor results, Dzubeck said.

They need the high bandwidth and the quality-of-service control provided by ATM, Dzubeck added.

HP OpenView for Windows SNMP
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NETWORK SUPPORT PACKS

Siemens widens DCOM's reach

By Mark Leon

SIEMENS-NIXDORF Information-systeme AG will this week announce extensions for its application development framework that will link Microsoft Corp.'s object technologies with other architectures.

ComUnity, a toolset for software developers that runs on Windows NT and supports Microsoft's OLE and Component Object Model (COM), will gain links to Unix and mainframe applications as part of a drive to bridge Microsoft technologies with existing IS investments.

In addition, the extensions will include software to integrate OLE with the Distributed Computing Environment (DCE), according to Siemens officials. DCE is currently the primary networking technology IBM is using to link its diverse system architectures.

Analysts said Siemens could bring valuable expertise to Microsoft's distributed object technology.

"It sounds like [Siemens is] trying to do something similar to Microsoft's Distributed COM [DCOM]," said John Rhymer, an analyst with Giga Information Group, in Santa Clara, Calif. "They could really add a lot of value with legacy integration."

DCOM is Microsoft's technology for linking NT across a network. The company is working with Digital Equipment Corp., NCR Corp., and Software AG to extend DCOM to Unix systems and mainframes.

In this next iteration, ComUnity will also get Internet credentials by adding support for Java, ActiveX components, and standard Internet protocols.

NT 4.0

leased in December.

That upgrade is expected to include Internet Explorer 4.0, which will in essence replace NT's GUI again — this time with a browser-based interface, sources said.

Also scheduled for that time frame is the common device driver interface that will let developers write a single driver for both Windows 95 and NT 4.0, providing NT users with their first hint of Plug and Play support.

However, true Plug and Play support is not expected to be added until Microsoft delivers the Cairo upgrade to NT late next year.

"Increasingly we will share core components [between Windows 95 and NT 4.X] like the Win32 APIs, the interface, and the common device driver model," said Jonathan Roberts, Microsoft's director of marketing for Windows. "In fact, it is the common device driver model where we will implement some

Plug and Play capabilities in Windows NT."

Beta testers were generally pleased with the software.

"This is the most stable code we've gotten from Microsoft," said one user. "And there are more drivers than we expected."

But there are some problems.

"The big drawback in NT 4.0's beta is the lack of support for wireless and mobile computing," said Mike Drips, a corporate consultant in Overland Park, Kan. "And if you are a Win95 user, you are going to take a big-time hit on Plug and Play."

Another more subtle drawback is that some of Windows NT 4.0's features and functions do not map to the mouse the same way as in Windows 95, which could cause some initial user confusion, some beta testers said.

"If you click on an NT 4.0 icon, you may not get the same response you get in Win95 for the same function," said one corporate user who requested anonymity. "They have dressed up NT to look like Win95."

Despite those problems and the

lack of some desktop functionality, some system vendors are betting that corporate users will start migrating to NT as soon as possible, because it has substantially better

Windows NT's long march

- ◆ July 31: Windows NT 4.0 announced
- ◆ September: NT 4.0 to ship
- ◆ Fall: Falcon and Viper'96 components due
- ◆ December: ServicePack with clustering, DirectX APIs, and Internet Explorer 4.0 due
- ◆ Late 1996: Common device driver APIs for NT and Windows 95 expected
- ◆ Late 1997: First release of Cairo, with Plug and Play and power management, due

support for pre-emptive multitasking applications.

"Most of our corporate users are bypassing Windows 95 entirely and expect to upgrade directly to Windows NT," said one system vendor.

Although Microsoft talks about NT becoming a desktop OS in two to three years, "we think you'll see it happening in six to nine months," the vendor added.

SMS

Directory Services (NDS), leaving users in mixed NT and NetWare 4.1 environments with potentially excessive costs when they look to integrate the two.

The problem stems from the fact that SMS only supports Novell's older binderies, and Microsoft may or may not address this issue in subsequent versions of SMS expected in 1997, said Michael Emanuel, product manager for systems management products at Microsoft, in Redmond, Wash.

SMS for NT has the capability to distribute software and perform remote troubleshooting and diagnostics for users attached to NT, NetWare, IBM LAN Server, and

Microsoft LAN Manager servers.

But at least one integrator, Alpine Computer Systems Inc., in Hartford, Conn., is recommending against integrating SMS with NetWare 4.1 environments that use the NDS enterprise directory.

Such integration requires redesigning the architecture of the environment to support binderies, a series of tasks that can cost thousands of dollars, said Gary Monti, an official at Alpine who is writing a white paper on the issue.

And SMS, used with NetWare 4.1, may be the only major network management tool that would require network managers to make use of bindery emulation.

Microsoft is studying the problem.

"We understand that it is an issue and we fully acknowledge the importance of NDS," Emanuel said.

A company official said Novell

Inc. is unfamiliar with the issue, but it's a matter for Microsoft to resolve.
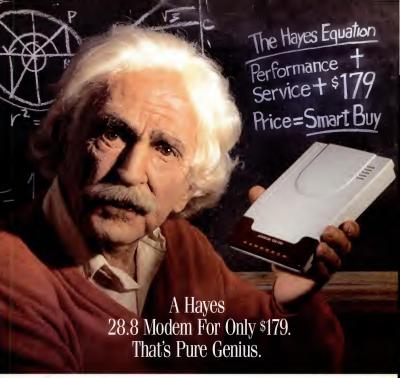
"It's not a matter of us making it more difficult for Microsoft [to support NetWare 4.1 and NDS]," said Kim Bergeron, Novell product line manager for ManageWise, in San Jose, Calif. By making it difficult to support NetWare 4.1, Microsoft will be prompting users to move to NT entirely, she charged.

Microsoft's Emanuel said the company has not supported NDS simply because of other priorities.

"It was never an issue of trying to avoid NDS," Emanuel said.

Users say NDS is a critical issue for Microsoft.

"If you're trying to convert the competition, you need to be able to do what they're doing," said Perry Mittler, network planner for AgCo Services, in Boulder, Colo. "Novell isn't going away soon."

Microsoft lets ActiveX go to standards group

By Cara Cunningham

MICROSOFT CORP. last week announced that it will transfer ownership and future development of its ActiveX technology to an independent, unspecified organization.

The company is ceding ownership of ActiveX — a component integration technology based on OLE 2.0, which has been a key to Microsoft's overall Internet strategy — in order to spur industry acceptance, said Tom Button, director of marketing for the Internet platform and tools division, in Redmond, Wash.

"We want to make ActiveX as open and cross-platform as possible," Button said.

Although Microsoft believes that there is significant industry support for ActiveX today, the company wants to ensure that its future growth will not be hindered by the perception that it is a proprietary

Microsoft standard, Button said.

Therefore, Microsoft is calling a working meeting in August with industry ISVs, operating system vendors, and users to either create a new ActiveX standards body or transfer the technology to an existing standards body, Button said.

Microsoft's role in this new organization will be as one of many voting members. It will contribute ActiveX specifications and source-code references of ActiveX on the Windows platform, as well as on Macintosh and Unix, for use by the organization, Button said.

Microsoft's move comes while Netscape Communications Corp. throws its weight behind the CORBA specification in an attempt to rally Microsoft's rivals around the Object Management Group specification and Java. (See related article, page 1.)

ORB

Microsoft's ActiveX technology.

OMG officials said Netscape is officially joining the OMG this week.

For developers, IIOP support will not only enable interoperability between object architectures, but it will also operate with existing flat-file applications, giving both backward and forward application compatibility. For example, IIOP will allow a user to access a flat-file application, such as an accounting database, by invoking an application service that links to the legacy system function, which is "wrapped" with an ORB stub.

"IIOP is a well-defined standard, rather than the smoke and mirrors of DCOM," said Donald DiPalma, an analyst with Forrester Research Inc., in Cambridge, Mass. "This will give developers a real alternative to the Windows environment."

To help developers start writing ONE applications, Netscape will this week release a software developer's kit and a series of beta versions of IIOP foundation classes. The first two classes are for user-interface controls and user-interface services. A new version of JavaScript, Version 1.1, that supports IIOP, will also be released in August.

"These are the next-generation development tools for building applications for any machine on any platform," said Alex Edelstein, Netscape Navigator group

product manager.

Visigenic's Black Widow ORB allows a piece of software to make calls on another piece of software, regardless of its location on the network.

DiPalma said that Netscape's decision to go with IIOP will dramatically increase its visibility.

"Until now, IIOP has been largely on the server, not the client," DiPalma said. "When IIOP is installed on 35 [million] or 40 million Netscape Navigators, it will spread that standard."

Netscape plans to include the Black Widow ORB and the first five releases of the Internet Foundation Classes in its next-generation client and server suites, code-named Galileo and Orion, respectively, due in the fourth quarter.

Meta Group's Kennedy said for Netscape's ONE platform to be successful, the Mountain View, Calif.-based company would need a lot of help. However, useful friends may be waiting in the wings.

"Informix [Software Inc.], Lotus [Development Corp.] and Oracle [Corp.] have all been talking about IIOP," DiPalma said.

Microsoft officials, who have been pushing the company's ActiveX framework, dismissed the Netscape IIOP-based proposal as "proprietary" and an attempt to catch up with Microsoft.

"We have a licensing structure in place now," said Cornelius Willis, group product manager for the Internet developer marketing at Microsoft.

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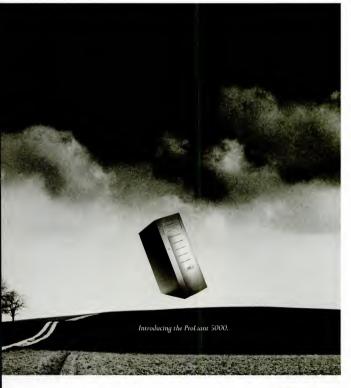
We've also partnered with the industry-leading companies of system management applications. So now you can view your entire network in one place. Together, these and other improvements have helped reshape the landscape of mid-range computing, by creating the most manageable server in the industry. To find out more about the ProLiant 5000, visit our Web site at www.compaq.com, or call us at 1-800-315-7772. It's not just a server. It's a force to be reckoned with.

System	tpmC	$ per tpmC
ProLiant 5000 6/166 M2	**$676.93**	**$135**
HP 9000 Server T500	$621.00	$380¹
WorldMark 5100S	$607.00	$394
SPARC center 2000E	$124.71	$323
HP 9000 Model K420	$919.11	$232
IBM RS/6000 J30	$631	$289

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Intel pricing fosters Pentium Pro

■ IS managers willing to consider powerful desktops as system prices come down

By Carolyn A. April

TRIGGERED BY Intel Corp.'s aggressive pricing, IS managers later this year could be tempted by an array of Pentium Pro-based PCs that creep within a $500 range of their Pentium-based cousins.

According to analysts, Intel will follow this week's 10 percent to 20 percent price reductions on Pentium Pro processors with a 15 percent reduction on the chips in November. In contrast, Pentium chip prices will be held at current levels for the rest of the year, Intel said. (See "Intel reverses price cuts on Pentium chips," July 15, page 3.)

"It's Intel's hidden agenda to get Pentium Pro on corporate desktops," said Rob Enderle, senior analyst at Giga Information Group, in Santa Clara, Calif. "It's nice that they are trying to move you there by pricing, rather than by discontinuing products."

The price gap is already narrowing. Micron Electronics Inc. offers a Millennia Pentium 120-MHz system with 16MB of RAM and a 1.6GB hard drive for $1,999 and a Millennia Pentium Pro 200-MHz system with 16MB of RAM and a 1GB hard drive for $2,699.

When Intel cuts processor prices, systems vendors generally pass on about half the reduction to users, according to analysts. So after November, the Millennia Pentium Pro 200-MHz system is likely to be priced at $2,497 — just $498 more than the Pentium 120-MHz system.

Not all vendors' Pentium and Pentium Pro systems will edge so close in price, but it's clear the drastic dollar disparity will diminish.

The question is whether IS managers will migrate to Pentium Pro on the desktop more quickly.

"The handwriting is on the wall that Intel is trying to get us to move to Pentium Pro," said Frank Petersmark, IS manager for Amerisure & Co., in Southfield, Mich. "And if the price is right, it makes sense."

But depending on the company and IS manager, the price differential required to send them running to Pentium Pro varies.

"For us to move to Pentium Pros on desktops right now, the price

difference would have to be in the $200 to $250 range," said Virgil Pittman, a senior vice president at Firemen's Fund, in San Francisco.

Ronan McGrath, at Canadian National Railways in Ottawa, said pricing is important, but the need for the systems takes precedence.

"We have 14,000 PCs here, and my purchasing decisions are software driven, not hardware driven," McGrath said. "We're reviewing NT 4.0 right now, and if we decide to go with it, then we'll be interested in Pentium Pros. But the hardware is there to support the software."

Pentium – Pentium Pro systems price gap narrows

Using a Pentium 120-MHz-class system as the average corporate desktop, analysts project a narrowing price delta between it and Pentium Pro systems.[1]

Processor	System memory	Hard disk	Current price	Projected price
Compaq Deskpro 4000 models				
Pentium 120 MHz	16MB	1.08GB	$1,600	$1,600
Pentium Pro 180 MHz	32MB	1.6GB	$3,000	$2,775
Price gap			**$1,400**	**$1,175**
Dell OptiPlex G model (includes monitor) and Dimension XPS				
Pentium 133 MHz	16MB	1GB	$1,826	$1,826
Pentium Pro 180 MHz	16MB	1GB	$2,899	$2,682
Price gap			**$1,073**	**$856**

1. Current and projected pricing on Pentium and Pentium Pro desktop systems.

Macromedia streams digital audio on Web

■ Shockwave upgrade supports near-CD-quality sound

By Chris Jones

MACROMEDIA INC. this week will unveil a version of Shockwave supporting high-quality digital audio files streamed from standard Web servers over the Internet.

Macromedia's Audio Xtras addition to Shockwave, available for free and downloadable from the company's Web site, compresses files created with its SoundEdit 16

MACROMEDIA'S new audio compression technology sends digital sound to Web sites at near CD quality with minimal bandwidth needs.

digital audio production application. SoundEdit works in sync with the Director multimedia package.

With Audio Xtras, developers can compress audio files at a fraction of their original size. However, to create near-CD-quality sound that is widely accessible, a developer would use an approximately 88-to-1 compression ratio, which streams smoothly over a 28.8Kbps modem connection.

Macromedia's Shockwave is a browser plug-in that is used to view interactive multimedia files and has been a center point of Macromedia's development strategy. It

will soon be part of Netscape Communications Corp.'s Power-Pack and integrated with the America Online browser and Microsoft Corp.'s Internet Explorer.

Last week, Macromedia released AppletAce, a tool for customizing its PowerApplet Java objects that enhance Web sites with banners, moving messages, and data charts that are dynamically updated from information on Web servers.

Analysts said Shockwave provides good exposure but having to download files from the Internet is still a barrier.

▶ MACROMEDIA page 32

Diamond offers NT 4.0 graphics card

SEEKING TO stake an early claim on what promises to be the latest PC gold rush, Diamond Multimedia Systems Inc. will introduce a low-cost graphics board for Windows NT 4.0 at next week's Siggraph show in New Orleans.

Diamond intends to position the Stealth 3D 3000XL as its flagship NT 4.0 solution, company officials said, with immediate support for Windows NT 4.0. Support for the Windows 95, DirectDraw and OpenGL APIs that will be shipped with the OS at the outset.

Priced at $299 for a board with 2MB of video RAM and $399 for a 4MB version, Diamond is hoping to cash in on what it expects will be a relatively early adoption of NT 4.0.

According to Diamond officials, corporate users are already planning to make the move to Windows NT 4.0 within six to nine months after that OS starts shipping.

Although the board also will ship with drivers for Windows 3.1, Windows 95, and Windows NT 3.51, Diamond expects the bulk of user interest to come from those anxious to move to Windows NT 4.0.

The board supports resolutions as high as 1,600 by 1,200 and a 120-hertz refresh rate.

Diamond, in San Jose, Calif., can be reached at (408) 325-7000.

— Tom Quinlan

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Intranets are a great tool for sharing information. To get the most out of them, look to Lotus Notes. With Notes, you can now build intranet applications using the latest Internet technologies. And with the new interactive Web application server, code-named Domino, you can run them with standard Web browsers. Over 12,000 Lotus business partners can help you build and deploy applications that transform your intranet from a static publishing vehicle into an interactive environment for business collaboration. Notes' state-of-the-art replication gets the latest information to the people who need it. And with Notes' RSA Data Security, only those who need it.

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COMPARING INTRANET COSTS**			
	Notes	Microsoft	Netscape
Server Price	$495	$5,773	$3,680
Client Price	$55	$93	$135

** For equivalent functionality as per Microsoft and Netscape Web sites 6/7/96. Visit www.lotus.com for more information.

More important, Notes does all this at a fraction of the cost of alternative products from Microsoft® and Netscape. Take a closer look at a Notes-powered intranet. It'll open your eyes.

Olympus offers an industry surprise with its low-cost portable MO drive

By Luc Hatlestad

OLYMPUS IMAGE SYSTEMS INC. next month will ship a $299 external magneto-optical (MO) disc drive that can be used on notebook computers and can store as much as 230MB of data on media that will cost only $10 per disc.

The SYS.230 Universal Personal Storage System disc drive uses MO technology to allow users to perform such critical tasks as archiving and backup, data exchanging, video editing, and collecting Internet files.

The drive's media is not subject to magnetic interference and has a guaranteed shelf life of 30 years, according to company officials.

The portable external version of the SYS.230 measures 8 by 6 by 2 inches and weighs 2 pounds.

Data is stored on 230MB discs that cost $10 each in quantities of five or more and hold the equivalent of 175 floppy disks' worth of information.

The drive has a transfer rate of 2.4MBps and a seek time of less than 17 seconds.

Prices for the SYS.230 are $299 for the internal PC SCSI version, $359 for an external SCSI-equipped model, and $389 for the external model with both SCSI and parallel port connections.

While supplies last, users who purchase the SYS.230 drive will receive five free storage discs, according to Olympus officials.

Olympus Image Systems, located in Melville, N.Y., can be reached at (800) 347-4027 or on the Internet at http://www.olympus-america.com.

SYS.230'S EXTERNAL UNIT *includes a power adapter, a cradle, and a parallel adapter with printer pass-through.*

AntiVirus scans Internet

■ IBM upgrade also protects against Concept virus

By Ed Scannell

IBM THIS WEEK will formally roll out an improved version of its IBM AntiVirus package that can now scan Internet documents for viruses before they reach a user's desktop.

Version 2.5 of the program, now being used to protect PCs at the Olympic Games, can identify and protect against 8,000 viruses, including the most virulent, the Concept virus, which attacks Microsoft Word documents.

"With thousands of new users getting on the Internet, the chances of users' programs getting infected [is expected] to escalate," said Steven Rosenblatt, brand manager for IBM's anti-virus products and services.

Compatible with all Intel-based environments, including Windows NT and Windows 95, the new version has a technology that IBM officials call "check on access," which scans a file for viruses coming from the Internet, on-line services, or bulletin boards.

Version 2.5 also scans a PC's memory, hard and floppy drives, and network-based servers. IBM has added support for automated and scheduled scanning for Windows 3.1 users.

Besides the desktop version, IBM released the AntiVirus Enterprise Edition for Networks. Additions include CD-ROM packaging intended to decrease installation time.

The new version will also give IS managers the ability to distribute the product the way programs are presently distributed via such venues as Lotus Notes, IBM's LAN Server, an intranet, or e-mail, company officials said.

"You can load and distribute the product from any IBM server. Users can either download it to their hard drives or open it up on the server and use it from there," Rosenblatt said.

For ongoing protection, IBM has one- and two-year subscription plans along with free monthly virus detection and disinfection updates, which are downloadable from IBM's home page at http://www.ibm.com/.

"We are out to save the world here. With over 8,000 viruses, or about six new ones a day, we don't want it to fall apart before the world of network-centric computing comes along," Rosenblatt said.

Scheduled to be available through resellers in mid-August, the update will carry a retail price of $49.

Since the company first began selling the product through resellers in January of this year, its sales have quadrupled on a month-by-month basis, according to company officials.

"It is now the company's best-selling desktop product with an IBM logo," said Steve White, senior manager with IBM's Massively Distributed Systems group.

IBM offers corporate accounts a broad range of options for buying the AntiVirus Enterprise Edition for Networks.

IBM, in Armonk, N.Y., can be reached at (800) 426-3333.

Macromedia

"Shockwave exposes [Macromedia's] technology to more people, but it's still a matter of downloading the files," said Joan-Carol Brigham, an analyst with International Data Corp., in Framingham, Mass.

Macromedia also announced last week that it will license Bitstream Inc.'s TrueDoc compression technology. TrueDoc allows developers to include fonts in Web page designs that browsers can display without plug-ins.

According to Macromedia officials, Shockwave is intended as everyone's solution to interactive media on the World Wide Web.

"With Shockwave, we've worked hard to set the standard for dynamic media on the Web — audio, graphics, interactive pieces — and to make sure it's available to everyone, with no special Web servers required," said Phil Schiller, vice president of product management at Macromedia.

Macromedia, in San Francisco, can be reached at (415) 252-2000 or at http://www.macromedia.com.

InfoWorld Street Prices

17-inch color monitors

Model[1]	Dot pitch	Low	High	Average	Change from May
Apple AppleVision 1710	.26mm	$859	$999	$910	-1%
CTX-1765GMe	.27mm	$613	$669	$635	-4%
Eizo FlexScan T2-17[2]	.25mm	$1,025	$1,130	$1,071	-5%
Mag innoVision DX17T	.26mm	$689	$774	$725	-7%
NEC MultiSync XP17	.28mm	$998	$1,069	$1,030	-1%
Nokia Multigraph 447X	.25mm	$899	$935	$915	-2%
Panasonic PanaSync S17	.27mm	$649	$760	$687	-2%
Samsung SyncMaster 17GLsi	.26mm	$779	$919	$822	-4%
Sony Multiscan 17	.25mm	$919	$1,029	$980	-7%
ViewSonic 17GS	.27mm	$609	$700	$651	-4%

InfoWorld Street Prices are based on telephone surveys of resellers and on print advertising in computer publications and regional newspapers. Price information was collected between July 14 and July 20.

1. All displays are flat screen, noninterlaced, multifrequency, MPR-II compliant; each has a maximum resolution of 1,280 by 1,024, except for the Eizo and Samsung models, which have a maximum resolution of 1,600 by 1,200, and the Nokia model, which has a maximum resolution of 1,600 by 1,280.

2. The Eizo brand was formerly known as Nanao.

WINDOW MANAGER · BRIAN LIVINGSTON

Anything I can do, you can do better: reader responses

THIS IS a good week to take a look at some reader responses to recent columns. I can hardly mention a new shareware program or obscure technique without someone sending me a tip about an even better one. Fine! Keep those insider tips coming.

In my July 1 column, I described a way to make the My Computer icon default to Explorer View, rather than Folder View. Some people prefer the two-pane look of the Explorer, which is a much more informative view of My Computer's resources than the bland Folder View.

My method was a simple change using a standard dialog box of My Computer. I noted that while this change alters My Computer, it also affects other applications. The Recycle Bin, for example, defaults to Explorer View rather than Folder View after the edit.

Dan Norton, product manager for Symantec Corp.'s Norton Utilities, writes to say he has found a way to change only the behavior of My Computer.

His method is more complex, involving minor surgery on the Windows 95 Registry. But you might find it fascinating to see how individual applications are controlled in cases like this.

Dan writes (I'm paraphrasing a bit), "You can achieve your goal for My Computer without affecting the other interface elements by editing the Registry entry for My Computer:

Hkey_Local_Machine\Software\Classes\CLSID\{20D04FE0-3AEA-1069-A2D8-08002B30309D}\Shell\Open\Command

"To cause the Explorer to start when you double-click My Computer:

"1. Run RegEdit.exe and select [highlight] the Shell key. Right-click the right-hand pane; then click New, Key. Create a key called Open that branches from Shell.

"2. With the Open key selected, right-click the right pane, click New, Key; and create a key called Command.

"3. With the new Command key selected, right-click the (Default) key, click Modify, and set the (Default) value of Command to Explorer.exe. You can use any of the Explorer start-up switches [documented in Windows 95 Secrets] or substitute the fully qualified pathname of any other program. Norton Navigator users would probably want to specify the path to the Navigator file manager.

"Close RegEdit.exe. The change takes effect immediately."

Yep, it works.

Can we dialog?

I described last week a shareware utility called Let Me See that expands common dialog boxes such as File Open to the full width and height of high-resolution displays. The program is still available on InfoWorld Electric at http://www.infoworld.com and from Eric Askilsrud's home page at http://www.cs.washington.edu/homes/erask/win95.html.

Eric asked me to mention that some features of Let Me See 1.11 "currently work only on English versions of Win95 and NT." Language groups other than these may have font metrics that can throw off the calculation of dialog box sizes.

Things are stacking up well

I'm getting my first feedback on the "stack pages" setting I unveiled on July 8. "Once again you have identified and provided a solution to a serious problem," John E. Hall writes. "You related exactly what happened to me and my frustration at trying to find the mysterious stack pages entry in System.ini. I think it was my Logitech Page Scan color scanner that was affected."

Keep 'em coming.

Brian Livingston is the co-author of Windows 95 Secrets *and author of three other Windows books (IDG Books). Send tips to brian_livingston@infoworld.com or fax: (206) 282-1248.*

Hewlett-Packard Co. on Aug. 1 will ship HP-UX 10.20, a new version of its OS that features the Java virtual machine. Version 10.20 also will support Net-Ware 4.1 services, including Novell Directory Services, when these services ship for HP-UX in November. There have been discussions about bundling the services on HP-UX, but a decision has not been made, according to HP. Additionally, HP announced its 64-bit implementation of HP-UX, Version 11.0, will be introduced in mid-1997. HP and Novell Inc. also announced an agreement enabling HP to bundle NetWare 4.1 on HP's NetServer family of PC servers. HP: (800) 752-0900; Novell: (801) 429-7000.

LANDMARK SYSTEMS CORP. is shipping PerformanceWorks SmartAgent for Windows NT, performance management software for NT Server and the SQL Server database. The software, a component of Landmark's Performance-Works performance management suite, monitors and manages multiple servers in NT domains. Another component of the suite, Performance-Works Domain Station for Windows NT, presents performance information from distributed NT servers on a single NT workstation, eliminating the need to log on to each server. SmartAgent costs $1,750 per agent. Domain Station pricing starts at $1,500. (800) 333-8666.

SPHERELINK COMMUNICATIONS CORP. has unveiled Internet Runway, software enabling Internet access for multiple NetWare users. It provides Internet and intranet access with a single IP address. Pricing starts at $795 for five concurrent users. Internet Runway supports Telnet, FTP (File Transfer Protocol), and Netscape Navigator. The software loads as a NetWare Loadable Module on a NetWare server and acts as an IP/IPX gateway. (408) 452-8300.

OAG specifications not yet plug and play

■ Vendors offer lukewarm support for emerging standard, look toward 1997

By Pardhu Vadlamudi

THE ENTERPRISE application market is moving toward plug-and-play compatibility among competing systems, but the specifications currently offered by the Open Applications Group (OAG) provide interoperability for only a limited number of business transactions.

The first OAG specification, released in March, provides an interface for posting information to general ledger applications. The OAG recently released its second set of specifications, a series of APIs for integrating the budgeting process.

"This is a first step, but it doesn't offer everything users would need to ensure interoperability," said Henry Morris, an analyst with International Data Corp., in Framingham, Mass. "This falls short of plug and play."
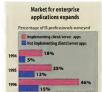
Most enterprise application vendors have announced support only for the first OAG specification.

Compliance with the second set is not expected until mid-1997.

"The plug-and-play concept is a great idea, but can they make it work?" asked John Gornick, an application development manager with Ushio America Inc., a J.D. Edwards & Co. site in Cypress, Calif.

The OAG said it expects to publish 15 more APIs, including specifications for integrating human resources and financial applications, by the end of September.

Dun & Bradstreet Software Inc. is expected to be the first client/server vendor with OAG-compliant applications when its SmartStream

TECH UPDATE

Market for enterprise applications expands

Percentage of IS professionals surveyed

■ Implementing client/server apps
■ Not implementing client/server apps

1994	18% / 5%
1995	25% / 12%
1996	46% / 15%

SOURCE: DATAPRO INFORMATION SERVICES GROUP

suite of applications ships later this month. Additional vendors, including Oracle Corp., Marcam Corp., Qad Inc., and American Software Corp., plan to ship OAG-compliant applications by the end of the year.

Other OAG members, including

warehouses, the Internet. The Internet is going to support more users demanding more data and easy access to new kinds of data. They want more interaction with the page, more content, and they want to do electronic commerce.

PeopleSoft Inc., J.D. Edwards & Co., Texas Instruments Inc., Software 2000 Inc., and IBM's Manufacturing Solutions Unit, expect to deliver OAG-compliant applications next year. SAP America Inc. and Baan Co. have not announced a delivery schedule, but they are supporting the OAG specifications.

"It's a goal we're trying to achieve, and it is important for the vendors to go in that direction," said Rob Compton, section manager for the IS department at Mitsubishi Semiconductor America Inc., a PeopleSoft site in Durham, N.C. "The plug-and-play compatibility is not where it needs to be."

HOTSEAT

CEO Phil White gears Informix to meet growing database market demands on the Web

Movin' on up

FOR THE PAST SEVEN years, Informix Software Inc. has held a respectable third place in the relational database market behind Oracle Corp. and Sybase Inc. But recently Sybase has stumbled, and Informix has edged into the No. 2 position. Late last year Informix paid a premium for Illustra Information Technologies Inc. in order to acquire an object-relational database. *InfoWorld* senior writer Mark Leon talked with Informix CEO Phil White about his company's plans for this technology on the Internet and in data warehouses.

How do you explain the momentum Informix has picked up recently?
Everything that's happening in the industry is driving databases, data

What is the biggest opportunity for Informix in the immediate future?
Data warehouses and data marts. Departmental demand for data-mart information is going to continue to feed on itself and drive a tremendous amount of business.

What role will your Smart Card alliance with Hewlett-Packard Co. and GemPlus Card International Corp. play?
I'm in the Smart Card business for two reasons. I think there are going to be billions of these cards issued; they will require large data warehouses on the back end. Secondly, it would be great to have 5 billion cards with my logo on each one.

Where does the Illustra DataBlade technology come in?
The DataBlade concept is elegant. It is simply a software module that describes a new data type, its behavior, and its access method. Today the access method is loaded into the database and is permanent. But with us, you buy a DataBlade and plug it into our database.

How are your DataBlades different from what your competitors are doing?
▷ WHITE page 38

COMPUWARE TO USHER IN FIRST UNIFACE REVAMP

By Ted Smalley Bowen

ENTERPRISE SOFTWARE developer Compuware Corp. this fall will introduce the first major upgrade of the Uniface development environment since its acquisition of the tool in mid-1994.

The upgrade, called Uniface Seven, will incorporate a higher level of abstraction for designing applications to suit business requirements and will add application delivery capabilities to the products, according to company officials in Farmington Hills, Mich.

Uniface Seven will implement the company's Uniface-in-3D scheme, which addresses development, deployment, and delivery phases of application creation, officials said.

The product's model-based design and development will allow developers and nontechnical business managers to work with design elements expressed in business terms, such as services, as opposed to exclusively code-level details.

"We've added an extra layer of application services and separated the logic from the presentation
▷ UNIFACE page 39

Big Blue to unleash big product upgrades

By Judy DeMocker

IBM ANNOUNCED last week processor upgrades and a new Scalable Powerparallel (SP) server in its RISC-based symmetric multiprocessing (SMP) line of RS/6000 systems.

Big Blue is offering its installed base of G40, J40, and R40 server customers free upgrades to its long-awaited 112-MHz 604 PowerPC processor. The models are priced 20 percent less than the same systems using the 75-MHz 601 chip, the company said.

IBM's SP server, dubbed the High Node, is an SMP machine based on the PowerPC 604 chip and designed for data warehousing, decision support, and online transaction-processing databases, according to the company.

The rack-mounted machine will ship in two- to eight-way configurations and will require Version 4 of IBM's AIX, said David Gelardi, manager of commercial parallel systems marketing for IBM's RS/6000 division.

The SP system has 16 microchannel slots, a maximum of 2GB of memory, and 6.6GB internal disk storage. The High Node is priced starting at $71,500 and will ship Sept. 27.

The upgraded SMP systems offer one to four dual 604 processor cards. The model R40 rack system ships with 128MB of RAM and 2.2GB of internal memory and will be priced at $69,000. The J40 deskside model with 4.5GB of RAM will cost $45,000. The uniprocessor G40 minitower model will cost $25,000. The servers will ship Aug. 30.

IBM also announced new versions of its LoadLeveler workload management software, also due Aug. 30, and its Parallel System Support Programs (PSSP) for AIX 2.2. PSSP, due Oct. 18, provides users with a consistent GUI for all management tools and lets IBM Netview monitor events using a single network management protocol.

The company is also launching Version 4.2 of its High Availability Cluster Multiprocessing software for AIX, due Oct. 25. IBM also has a second release of its Client Input Output Sockets product, facilitating high-speed transfer of data between AIX and MVS systems. All software will support AIX 4.2 when it becomes available at year's end.

IBM, in Somers, N.Y., can be reached at (914) 766-1900 or http://www.ibm.com.

White

Oracle today has a Universal Server; we have a Universal Server. Ours is one database with modules. Oracle bundles different servers together. There is no way they can ever support that environment in any volume.

If your solution is so simple and elegant, why haven't your competitors done it?

The reason I paid so much for Illustra is it was the best object-relational database out there. The acquisition allowed me to get a year-and-a-half lead. I paid $350 million, which is what I thought it'd be worth in July of 1996. I think it will change the database industry, because I think our competition will have to scurry to catch up.

How important is your partnership with Netscape Communications Corp.?

Netscape's biggest competitors happen to be mine: Oracle and Microsoft [Corp.]. I embed Netscape Navigator in my products, and they use my database for their back-end servers. I've got a team sitting in offices at Netscape doing current and future development.
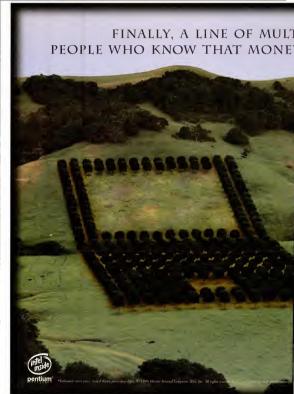
What's in Informix's future?

Once you have the ability to store all types of data, using the Illustra DataBlade technology, the logical extension is to give users answers to questions they haven't even thought to ask.

That sounds like data mining.

It's data mining, but with an AI [artificial intelligence] bent. We can mine data before you even think about it.

When will we see this as a product?

It will be several years away.

FINALLY, A LINE OF MULT
PEOPLE WHO KNOW THAT MONEY

intel inside
pentium

Dun & Bradstreet Access to connect European databases

DUN & BRADSTREET Information Services is readying an interface that allows users of SAP AG's R/3 to access the company's business information databases that store data on 17 million European companies, the company said last week.

Slated to be available in the fourth quarter

of this year in Germany and in the rest of Europe in the first quarter of 1997, Dun & Bradstreet Access for R/3 will provide a link between Dun & Bradstreet's Business Information database and R/3's Credit Management Module (supporting Version 3.0c of R/3 and later), according to Dun &

Bradstreet officials.

Pricing for the interface has not been announced.

Dun & Bradstreet, located in Frankfurt, Germany, can be reached at 49-69-663-030.

— *Torsten Busse, IDG News Service, Munich, Germany*

PEOPLESOFT TO LINK SALES-TRACKING, ACCOUNTING APPS

CLIENT/SERVER application provider PeopleSoft Inc. is in discussion with several software vendors, including Vantive Corp., to link sales-force automation software with accounting systems.

The integration is expected to give financial executives the ability to be more proactive by tracking sales during a specific quarter rather than merely analyzing sales volumes after the quarter has closed. For its part, Vantive is trying to link its support applications to large-scale enterprise systems that can use asset management and sales data.

PeopleSoft wants to integrate information at the database level and then move on to creating more seamless interfaces between applications, according to Rick Bergquist, vice president of technical services, in Pleasanton, Calif.

— *Chris Jones*

Uniface

services. People are modeling to business structures rather than implementation," said Claire Eggington, marketing manager at Compuware.

"Companies are looking to overlap the two universes of IT and business. It's a natural progression," Eggington said. "Businesspeople are making the decisions on technology and development, rather than the programmers, who are better able to respond to the business requirements with this degree of abstraction."

Some analysts liked Compuware's approach.

"Their business-model-driven approach allows developers to take business processes and define the flow of the application separately from the underlying application. It's a good approach," said David Kelly, a consultant with Hurwitz Consulting Group Inc., in Newton, Mass. "Corporate clients are looking for that kind of capability tied in directly to a development tool like this."

In step with corporate and commercial development priorities, the product's deployment options will include the World Wide Web in the upgrade, which is due to ship this fall, company officials said. The revised version will support component-based partitioning. The Uniface Seven upgrade will include a wide range of delivery options, officials added. The Uniface delivery mechanism, which allows developers to determine an application's mode of delivery upon completion, will add a set of frameworks for global, vertical, and local packaging options.

Uniface has an installed base of roughly 3,000 sites, company officials said.

Compuware is at (800) 521-9353.

HELP DESK · BRETT GLASS

For now, 'Plug and Play' means same as 'Win95-specific'

We have recently purchased a Supra 28.8Kbps internal modem. The box said it is "Plug and Play," but what it did not say is that the modem would not function at all on non-Windows systems. We run Unix. Can we use the modem?

Chuck Greeley

I recently tested Supra's Plug and Play internal modem, and on my test machines — none of which has a built-in Plug and Play BIOS — the supplied software only configures the modem for DOS and Windows. Even with the special drivers loaded, Windows 3.11 sometimes was unable to access the modem.

According to reports on Internet mailing lists, you may be able to use the board in your machine if you do a two-stage bootstrap in which you boot DOS and then automatically load Unix. This is possible in Linux (but not in all versions of Unix) and also with NetWare.

Plug and Play modems and other similar products should come with a jumper or DIP switch that allows them to be configured manually. Because Plug and Play support in other OSes is spotty or nonexistent, products that do not have provisions for manual configuration should be considered Windows 95-specific. For now, avoid them if your organization does not wish to be tied to Windows 95.

In your July 15 column, you stated Web browser vendors should add features that provide control over the use of cookies. Several months ago, we at Netscape [Communications Corp.] added an option to the Navigator 3.0 beta that allows users to reject or accept cookies.

Jeff Weinstein

This is a much-welcome addition to the beta of Navigator. It is also vital to allow users to inspect and edit the cookie file — to find out whether personal information, such as an e-mail address, a Social Security number, or a credit card number, has been stored without encryption in a cookie. Microsoft's Internet Explorer and any other browser that supports cookies should also add all of these features.

I've also been informed that the security of JavaScript has been tightened in recent versions of Navigator, reducing the chance that it could compromise personal information. Personally, I still leave JavaScript off in all my browsers, because even if it were made 100 percent secure, it would probably still be used mostly for Web page gimmicks rather than to convey useful information.

I have a Pentium system with a 1.2GB hard drive divided into three partitions of 200MB, 500MB, and 500MB. DOS and Windows are on the smallest partition, which was fine until I upgraded to Windows 95. Now that partition is running out of space. Is there a utility that can reallocate the space without requiring me to back up, repartition, reformat, and restore everything?

Edward Crissey

If you're not performing regular backups already, don't delay — do it now. But once you've performed a backup, there is a utility that can reallocate the space on your drive: PartitionMagic, from PowerQuest Corp. [(800) 379-2566]. It recognizes High Performance File System, NT File System, NetWare, Linux, and Windows 95 file partitions. And the latest version can resize hard disk clusters, so you can reduce slack space on smaller file allocation table partitions. About the only thing it can't do is give you more than four partitions per drive — a shortsighted constraint imposed by the designers of the original IBM PC/XT.

Brett Glass' Help Desk answers business computing questions. To submit a query, call (800) 227-8365, Ext. 702, or send e-mail to brett_glass@infoworld.com. Visit his forum on InfoWorld Electric at http://www.infoworld.com.

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"Quick, download the Magic Test Drive from our Web site to see how fast you could be developing applications. Now tell them it will never happen again."

"Oh no! They want to see me right now! They sound like they're really...(silence)"

Click

VeriSign acts as an online notary public

■ Vendor offers encrypted certificates for secure transactions on the Internet

By Jim Balderston

VERISIGN INC. and Visa International Inc. announced a deal last week that will provide digital certification of credit cards, allowing consumers to purchase products over the Internet without exposing their credit card numbers on the 'net.

VeriSign, which claims to be the only company offering digital certificates in the marketplace today, will provide Visa customers with the ability to create a "digital credit card" that offers all the benefits of a regular credit card plus additional security online.

The digital credit cards will comply with the Secure Electronic Transactions protocols announced earlier this year by Visa and Master-Card International Inc.

"In the new model of transactions, not even the merchant will see the credit card number," said Kelly Ryan, marketing manager at Mountain View, Calif.-based VeriSign.

Ryan said a customer visiting a Web store who wishes to pay for a selection of products would be prompted to choose the way that he or she would like to pay.

If the customer chooses a Visa card, he or she would be offered the

chance to create a digital version of the existing credit card.

VeriSign would then confirm that the individual had a valid Visa card and issue a certificate to that effect. Once the digital card has been issued, the customer

would not have to repeat the process the next time he or she wants to buy something.

"We do not authorize the sale," Ryan said. "Visa does that. What we do is issue the credit card."

Ryan said that once a user creates

a digital credit card through VeriSign, all future transactions are authorized between the user and the financial institution that issued the credit card.

"The Visa/VeriSign approach is reasonable and adequate to help Internet commerce to potter along," Ryan said.

However, Ryan did not expect certificates to be a make-or-break proposition for the emerging Internet commerce market.

Digital ID Status Check for web and e-mail client Digital IDs

"Electronic commerce will proceed with or without high levels of authentication," Ryan said.

However, credit cards aren't the only things that VeriSign expects to authenticate. The company — along with Microsoft Corp. — is planning

to offer certificates that verify the authenticity of downloaded software objects or components.

This "code-signing" service would ensure that the software came intact from a vendor and had not been tampered with, Ryan said.

David Ferris, president of San Francisco-based Ferris Research Inc., said digital certificates for credit cards would help electronic commerce continue to grow.

Code-signing, however, may not

have as great a value to users downloading objects from the Internet. Both Microsoft and Netscape Communications Corp. plan to do this.

"A certificate only provides a trail for you to follow after you have downloaded the object," said Larry Cable, project lead for JavaSoft's JavaBeans division. "If it crashes your system, all you know is who to send your lawyers after. A certificate is basically security after the fact."

Ferris was also doubtful that code-signing would offer any real benefits to end-users.

"This strikes me as a much smaller issue," Ferris said. "I think the vendors are more interested in ensuring that their licensing agreements are honored."

Microsoft will not limit TCP/IP usage in NT Workstation 4.0

By Paul Krill and Jessica Davis

MICROSOFT CORP. has backed off a proposal that could have adversely affected smaller customers by imposing a TCP/IP connection policy that limited the use of NT Workstation 4.0 as a Web server.

The restriction, found in the current beta version of NT Workstation 4.0, allows only 10 TCP/IP connections in a 10-minute period.

A Microsoft representative said the company now plans not to implement this restriction in the final release of the product. NT 4.0 is expected to be formally announced this week and ship in September.

If Microsoft had decided to ship NT Workstation 4.0 with this limitation, it would have stifled deployment of third-party Web servers,

particularly at small sites that do not want to deploy a more expensive server operating system, said one Web server vendor. The base price of NT Server is $999, and Workstation costs $319.

Microsoft bundles its Internet Information Server with NT Server.

One O'Reilly & Associates Inc. WebSite user said he strongly disapproved of such a tactic, which might have eliminated a whole class of low-cost Web server products.

"We run O'Reilly's Web server because it's a better server; it has better security," said Walt Brannon, an official at Web 3 Productions, a programming services provider in New Orleans. "Just because Microsoft gives something away doesn't mean it's free."

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HITACHI
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C O M P U T I N G

Remote Control

NetCentric takes a more realistic approach to Internet communications

HERE LAST WEEK I called it fraud to offer free long-distance telephone calls over today's bogging-down Internet. So this week I had fraud on my mind as I crossed the Charles River to visit NetCentric Corp., a start-up offering not phone but fax calls worldwide over the bogging-down Internet "for as low as 2 cents per minute."

Instead of fraud, however, I found one of my favorite things at NetCentric: an ambitious young company full of idealistic engineers and exciting new ideas "at the dawn of a new age in telecommunications."

Founder Sean O'Sullivan and Vice President of Engineering Paul English showed me around NetCentric, which is located across from Boston's Museum of Science. NetCentric has $4 million of venture capital and close to 40 employees. NetCentric has now reached the ripe old age of 18 months and is demonstrating its first product.

Now what's really interesting about Net-

Centric is its core technology, POPware. NetCentric is selling the POPware platform (at more than 1 million lines of code) and its applications, such as FaxStorm, not to consumers or corporate information systems managers but to Internet service providers (ISPs).

NetCentric is opening up POPware to establish a new category of independent software vendors (ISVs) that will be writing applications to run "inside" the Internet. These applications will run on NetCentric POPware servers where the Internet accepts local calls, at ISP "points of presence" (POPs).

FaxStorm is NetCentric's first POPware application, and the company needs examples to start that ISV ball rolling. FaxStorm offers PC fax users more than just transient exploitation of limited "free" Internet transmission capacity. And FaxStorm can help ISPs increase revenues by metering the usage of premium services, thereby moving them toward long-term viability. So, yes, I'm tooting

for http://www.netcentric.com.

O'Sullivan and English explained that POPware, which communicates using HTTP, is not just another Web server. Web servers provide services "outside" the Internet — especially in intranets — and they are typically for sale to *InfoWorld* readers. POPware, on the other hand, is for sale to ISPs to run on Unix and NT Pentium-collocated with their hubs and routers — inside the Internet.

NetCentric will have a booth at One ISPCon (http://www.ispcon.com) in San Francisco, where I will be speaking next week. There, the entrepreneurs will find themselves surrounded by thousands of ISPs, most of which only recently were "sysops" running pre-Internet bulletin board system software. O'Sullivan and English were at first flabbergasted that I would ask how POPware differs from a BBS. After some denial, English finally answered, OK, POPware is sort of like a BBS, except that POPware has been written to handle 30 million callers at a time.

Standing in NetCentric's network operations center (NOC), I noticed a red alert — one of NetCentric's ISPs had gone down! I can't say which ISP it was, but as I stood there for half an hour, this big, big network service provider in Cambridge, Mass., went down a

half-dozen times. NetCentric has to call this ISP and tell it when it goes down, because like most ISPs, it wouldn't know otherwise. Duh.

By "down" NetCentric meant that the ISP was dropping several minutes' worth of NetCentric's packets due to overflowing queues in one of the ISP's routers. When notified of this, the ISP, which ought to know better, manually increases the length of the overflowing packet buffer queue. I wonder if this accomplishes anything besides moving the problem around. And I shudder to think what might happen if an ampersand were to be accidentally typed into the queue buffer configuration software.

NetCentric is planning, but has not announced, to offer various NOCware applications — programs that run at ISP operations centers. One such NOCware application will keep track of the ups and downs of a POP's various ISPs and the Internet's health overall.

As if to earn my spreading reputation as an Internet control freak, I was full of NOCware suggestions for NetCentric. One of these, admired subsequently by none other than Netscape's Marc Andreessen, will be our subject next week.

Bob Metcalfe invented Ethernet in 1973 and founded 3Com Corp. in 1979. He receives e-mail at bob_metcalfe@infoworld.com via the Internet.

Travel services are first online commerce offerings to fly

■ **Many corporations arrange flight, car rental, and hotel bookings on the Internet**

By Lisa Nishimoto

ONLINE TRAVEL SERVICES at major corporations have become one of the first real examples of online commerce in the business sector, increasing the efficiency and reducing the expense of travel planning.

MARKET ANALYSIS

Companies such as Palo Alto, Calif.-based Internet Travel Network (ITN), under its Private Labels service, and Fort Worth, Texas-based Sabre Travel Information Network, under its Business Travel Solutions (BTS) program, contract with businesses and their travel agencies to provide electronic searching and automated booking for flight, car rental, and hotel reservations.

"So many corporations have a corporate travel department or have contracts with a corporate travel agency that it's natural for a company to step in as a middle agency," said Bruce Cogdill, research director of electronic commerce and Internet strategies at Gartner Group Inc., in Santa Clara, Calif.

These services enable direct com-

munication with an airline's Computer Reservation Services. Such services let users search for available flights, car rentals, and hotel rooms, and they return availability and rate information. ITN searches Apollo, Sabre, Worldspan, and System One. Sabre BTS searches Sabre's reservation information.

Once a user has selected an itin-

erary, the service passes the information on to the designated corporate travel agency, which contacts the customer for payment and ticketing. ITN offers the option of credit card payment protected by Netscape Communications Corp.'s Secure Sockets Layer, but payment is usually handled through a travel agency's established procedure.

ITN uses a Web interface that it

helps its customers build and is deployable by Internet or intranet. Sabre customers use a suite of travel management software for reservations and will soon be able to choose an intranet solution, code-named Laredo, available via the World Wide Web.

Each service requires an initial setup fee, which depends on the scope of the system. Then customers pay on a per-transaction basis. ITN charges $3 per transaction, and Sabre BTS charges between $4 and $7.50 per transaction. For service and support, ITN requires a monthly fee; Sabre includes service and support in the transaction fee.

Third Party Solutions Inc., in Chicago, sells its TravelSite search engine to travel agencies and works with them to develop sites. The company uses the Sabre reservation system and currently offers flight reservations only. Other options include using a travel agency's Web site, a travel site such as Travel-Web (http://www.travelweb.com), or online services such as those found on CompuServe and America Online.

ITN can be reached at (415) 614-6300, http://www.itn.net, or red carpet@itn.net. Sabre is at (817) 264-3707 or http://www.sabre.com/sabr_grp/stin/stinhome.htm. Third Party Solutions can be reached at (312) 431-8130 or at http://www.tpsol.com.

Microsoft will launch Web travel rival

MICROSOFT CORP. is going into the travel business with a service that will rival existing offerings. The software giant will turn travel agent in the fourth quarter with the release of a Web-based airline, car rental, and hotel booking service, the company said last week.

The service will be launched under Microsoft's Interactive Media Division, which puts out the online political magazine, Slate, and other Web-based content sites, such as the new MungoPark site devoted to adventure travel, said spokeswoman Suzanne Dennehy.

Microsoft, located in Redmond, Wash., is at (206) 882-8080 or at http://www.microsoft.com.

— Kristi Essick, IDG News Service

SCHWAB TRAVELS WITH ITN

Charles Schwab & Co. Inc. is the latest major company to outsource its travel planning to Palo Alto, Calif.-based Internet Travel Network (ITN), which provides real-time Web-based flight, car rental, and hotel reservations.

Charles Schwab Travel, the travel agency for the company, last week made ITN's electronic reservation system available to senior staff and assistants after two months of testing.

Schwab used ITN's Private Labels service to create a customized travel reservation Web site for the company.

Employees access the site and request booking using a Web browser through the company intranet, SchWeb, or remotely, using the Internet.

The key gains from using this service, according to Bob Grant, director of corporate travel at Schwab, are better, faster service and reduced processing costs.

"It costs between $28 and $38 to process a reservation," Grant said. "With ITN, we've got it down to about $7 per transaction."

Grant estimated that the company issues about 1,600 tickets per month.

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IT'S AMAZING WHAT
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Web network management is here today

By Stephen Lawson

THE WEB-BASED Enterprise Management standard for integrated network and systems management, called for by Microsoft Corp., Cisco Systems Inc., and a broad group of vendors earlier this month, will not be complete until next year at the earliest, but major networking hardware vendors are already using the World Wide Web to simplify network management.

Although most of these applications of Web technology are limited in scope now, vendors are mapping out strategies that would let managers do a lot more of their work through a browser — and could put some tasks in the hands of network novices.

Cabletron Systems Inc. currently offers Web-based reporting and Web Alarm View in Version 4.0 of its Spectrum network management software. Joe Massey, director of engineering for Spectrum, said last week that the company would eventually migrate all of its client interfaces to the Web format.

Spectrum can convert any report it produces on network health, performance, usage, or device status into HTML pages. Users across the enterprise can look at updates from any Spectrum server on any system equipped with a Web browser.

Users can also use the browser to set how often reports are produced and what information they provide.

With the Alarm View function, which can be tied to a paging system, an administrator on the road can receive a standard pager notification and get full information about the alarm through a Web browser at home or anywhere, Massey said.

Cisco provides a way for untrained users at remote sites to set up Cisco 1000 series remote-access routers out of the box without loading special software on their PCs. The ClickStart feature borrows a currently unused IP address at the remote office and gives it the Web URL router.com. By pointing a browser at that address, the user can call up an interface for configuring the router and set up a con-

nection with the central office.

There are also some Web-based management capabilities built in to Internetworking Operating System (IOS), Version 11.1, the latest release of Cisco's router software. Through-out 1997, the company will provide Web interfaces for more features of the IOS.

Kathy Rocha, a marketing director at 3Com Corp., said the Web may someday be the company's only management interface, but for now 3Com is taking it slow.

This fall, users of 3Com products will be able to view device status and monitoring information via Web interfaces. After that, the company will or will not add more Web capabilities based on customer response, Rocha said.

3Com announces RMON 2 for Transcend

By Michael Parsons

3COM CORP. announced extensions to its Transcend Network Management offering that it said will provide the most complete RMON 2 offering on the market.

These include Traffix Manager, which displays end-to-end communications patterns across the network, and LANsentry for monitoring traffic on remote LAN segments.

Although the RMON 2 standard is not yet final, 3Com acquired useful RMON technology with its purchase of Axon Networks Inc.

"Axon was very involved in RMON 2, so we've got a leap ahead

of the rest," said Deb Curtis, senior product marketing manager at 3Com.

RMON probes around the network provide a dynamic image of network traffic patterns, allowing network managers to see how specific applications and protocols are performing. Other vendors, such as Bay Networks Inc. (see article, below), sell their management products already offer similar functionality, and they will field-upgrade their systems to the standard in a way that is invisible to end-users.

"We're roughly compliant with RMON 2 today: There is really no

benefit in complying to a standard that doesn't yet support interoperability between vendors," said Tim Riley, Bay Networks product marketing manager.

Traffix Manager will ship in August priced at $7,995. LANsentry will ship in September priced at $4,495 for Unix and $1,995 for Windows.

3Com also announced new modules for its SuperStack II Enterprise Monitor that support Token Ring and Fast Ethernet and cost $2,895

and $3,895, respectively. The SuperStack Enterprise Monitor Series 500 RMON/RMON 2 probe will ship in August.

3Com, in Santa Clara, Calif., can be reached at (800) 638-3266.

TRAFFIX MANAGER *creates a graphical view of application and protocol performance.*

Bay splits Optivity suite into analysis and design modules

BAY NETWORKS INC. last week announced a repackaging of its Optivity network management suite into separate analysis and planning tools, some new software components, and some RMON/RMON 2-based Fast Ethernet probes.

Optivity Analysis 7.0 and Optivity Planning 7.0 applications now provide network administrators with information on network design in switched networks. Optivity Analysis includes the OnSite management application and the brand-new TrafficMan Internetwork Monitor. TrafficMan provides end-to-

end views of traffic across the enterprise network. Optivity Planning suite has NetReporter, a SNMP/RMON-based data collection and report-generation tool. It also has the DesignMan simulation tool.

Optivity Analysis is available now for $5,995. Optivity Planning is also available for $5,995 but will ship in September. The new FE100 and FE200 Fast Ethernet StackProbes cost $5,995 and $8,995, respectively, and will be available in August.

Bay Networks, in Santa Clara, Calif., is at (408) 988-2400.

— Jessica Davis

TIS upgrades firewall to protect networks from Java and ActiveX applets

By Michael Parsons

IS MANAGERS concerned about the risk of Java applets causing havoc on their networks now have a simple solution: Turn Java off.

The latest version of Trusted Information Systems Inc. (TIS)'s Gauntlet Internet Firewall includes an option called Java Guard that

automatically prevents Java code from crossing the firewall.

The option will also be capable of preventing ActiveX applications from entering corporate networks, according to Frederick Avolio, vice president of marketing at TIS.

At present, Java Guard cannot discriminate

between different types of Java applications, but this may be possible in future versions of the software.

"Part of our research is going into how granular you can make it," Avolio said.

Version 3.2 of Gauntlet also includes stronger user authentication, centralized

management of firewalls, and improved support for remote users.

The new management features allow administrators to configure a firewall and distribute its configuration to all the firewalls around the network. The software also enables proxy support for Sybase databases, letting authorized customers and suppliers access database information within the firewall.

According to Avolio, many large organizations are beginning to deploy firewalls inter-

GAUNTLET 3.2 provides a way to turn off access to Java applets.

nally. This can enable connections that were previously impossible for administrative reasons, such as conflict of interest or U.S. and European banking laws.

Version 3.2 is available now for BSDI Unix OS, HP-UX, and SunOS platforms at a list price of $11,500. A discount is available for customers who are upgrading.

TIS is in Rockville, Md., and can be reached at (301) 527-9500 or http://www.tis.com.

Geoworks molds content, services for smart phones

GEOWORKS INC. will package and deliver content and services for smart phones that use its Geos operating system, company officials announced last week.

The company has formed a new wireless content and services division, of which Jonathan Kaplan will be the vice president and publisher, officials said. The content will be geared toward smart phones — cellular phones that offer other applications such as e-mail or a personal organizer. The Geos operating system has already been licensed for several smart phones, including the forthcoming Nokia 9000 Communicator.

The division will team up with content providers and cellular-phone operators to package travel, financial, news, entertainment, and other information, and build networked applications for the content and services.

The content and services will become available later this year for European customers of the Nokia 9000. The company is also planning to make the services available at an unspecified time for other European customers and in Japan and the United States.

Geoworks, in Alameda, Calif., can be reached at (510) 814-1660 and on the World Wide Web at http://www.geoworks.com.

— *Sari Kalin, IDG News Service, Boston*

Lotus unveils client enhancements to Notes

By Jessica Davis

LOTUS DEVELOPMENT CORP. this week will announce enhancements to both its live and storage-based video software in the form of upgrades to RealTime Notes and VideoNotes.

"In 1995 the technology tire kickers were playing around with videoconferencing," said Scott Andersen, product manager for Real-Time Notes. "This year standards committees are figuring out how to deploy it, and pilot projects are under way."

VideoNotes 1.2 is the 32-bit, Windows 95, OLE 2.0 implementation of the product.

RealTime Notes, which was unveiled less than 1 year ago in cooperation with Intel Corp. and Intel's ProShare conferencing products, will go to Version 2.0. Intel's ProShare product line comes in three editions: a shared whiteboard; the whiteboard plus support for application sharing; and an edition that supports the whiteboard, application sharing, and videoconferencing.

Version 2.0 of RealTime Notes offers tighter integration between Notes and the ProShare system, allowing the systems to exchange name and address information.

In addition, the Conference Journal Database has been extended in Version 2.0. This provides users with a log of conferences, the applications shared in them, and the documents used.

The upgrade also includes a conference-enabled e-mail form. A Call Sender button is embedded within the e-mail message, and the user can click on this to respond in real time to the e-mail. Similarly, a conference-enabled Notes address book now features a similar button marked Call Person.

RealTime Notes 2.0 will include both Real-Time Notes functionality and the Intel Pro-Share Premiere 2.0 product and will cost $60. It will ship in August. Volume discounts will be available. VideoNotes 1.2 will also ship in August priced at $2,695. The client will cost $120.

Lotus can be reached in Cambridge, Mass., at (617) 577-8500.

CROSSOVER TO GREEN RIVER WILL BE EASIER

NOVELL INC. is enhancing file and bindery migration and installation in the Green River release of NetWare, also known as NetWare 4.11, which is due to ship this fall.

One feature is called File Migration, which is for transferring data files from NetWare 2.x and 3.x to NetWare 4.11. Another feature, DS Migrate, is for modeling and performing bindery, or server directory, migrations from past NetWare releases to 4.11, said Novell's Willie Donahoo, senior product marketing director for NetWare, in Orem, Utah.

These utilities will be more useful than planned installation improvements in Green River, said Chris Weitz, senior architect and designer at U.S. Bank, in Portland, Ore.

"These are much more valuable, because migration of 3.x environments right now is a lot of work — and a major impediment to using Version 4 [of NetWare]," Weitz said.

The installation enhancements include Automated Adapter Discovery, which automatically detects, discovers, and installs LAN, disk, and CD-ROM drivers on a network. Drivers supported include those compliant with common architectures such as PCI and EISA.

A complementary feature, Automated Protocol Discovery and Configuration, detects what LAN protocol card the customer is using, be it IP or IPX, and configures the system accordingly.

— Paul Krill

▶ Internet security software

Guardian offers a sophisticated, PC-based firewall

By Douglas A. Zelinka

I F YOU'RE TRYING to expand your PC-based enterprise and are thinking of implementing a Unix-based firewall, you should consider a Guardian instead. Net-Guard Inc. has lowered the cost of ownership for high-end firewall software, particularly by outfitting Guardian 1.3 with sophisticated features for PC-based network OS platforms that were previously available only with Unix solutions.

With Guardian, companies can secure their PC-based corporate networks from undesired outside intrusion via the Internet. Guardian alerts administrators to improper or suspicious access attempts and furnishes explicit control over data sent or received via the Internet.

Using the optional Network Address Translation agent, you can conceal your network's internal IP addressing scheme. Also, you can conserve a number of global Internet addresses by leasing them to users on an as-needed basis.

The Guardian firewall is best deployed directly on an Internet gateway or on a dedicated machine between the router and the local network. The Guardian Agent provides security via Secure Sockets

Layer and runs on OS/2 Warp or Windows NT.

To put Guardian through its paces, I placed a Compaq Computer Corp. Deskpro XL 590 client running Windows 95 on an isolated network with a Compaq Desk-

THE WINDOWS-BASED GUARDIAN MANAGER *includes templates to help you tailor a firewall strategy to meet your organization's needs.*

pro 66M running OS/2 Warp as the firewall. The Deskpro 66M had 64MB of RAM and two Compaq EISA NetFlex-2 Ethernet adapters — one network interface card to service the private network and one to access the gateway to the Internet.

Installing the agent for OS/2 Warp required me to copy individual files and to manually edit OS/2 Warp's CONFIG.SYS and PROTOCOL.INI files. The installation for Windows NT uses a hospitable setup program that sets initial values for you. In either case, you supply the IP address and an initial encryption key code (from the Guardian installation disk label) the first time you activate a Guardian Manager session.

You can install the Guardian Manager anywhere on your network. And from that one console, you can securely administer all Guardian Agents in the enterprise, because the management program communicates with each agent using a different encryption scheme.

The Guardian Manager's user interface is also reasonably intuitive. Indexed with the product are templates for agents, network objects, and services. I used the templates to define my agent machine and several IP hosts. I then added a sequence of rules to filter access to the World Wide Web, FTP (File Transfer Protocol), and time services. Guardian proved fairly flexible in that I could insert ad hoc temporary rules that permitted me to

modify my firewall strategy quickly when needs changed. For example, I inserted a rule preventing FTP access between 12 p.m. and 1 p.m.

The traffic cop

With IP traffic on the rise, network address, range of addresses, or domain. For example, if the accounting department exceeds its receipt limit of 10MB of Web data per hour, you could configure Guardian to pass, ignore, or reject the transgressors and to log the activity and/or alert you.

Of course, you can restrict access to services during certain hours to specific users. Additionally, the Manager console displays windows for logs and alerts and can graph statistical activity logs for each agent in your enterprise down to specific services.

A premier value-added feature of Guardian is its capability to log and alert you to suspicious activities, such as a disproportionate number of invalid passwords, a long series of invalid TCP sessions, or unusual login times. The system can alert you to spoofing — packets with origin and destination on the same network — which is indicative of hacker activity.

NetGuard plans to address a variety of Internet security problems in the future by adding encryption and electronic signature facilities intended to make private channels possible over the public Internet.

bandwidth is a valuable asset you can't afford to waste. By creating rules in the Guardian Manager, you can limit the amount of traffic that can be sent or received from a specific user ID/password, host, IP

Douglas A. Zelinka is a software engineer and Certified OS/2 Engineer. His Internet address is 74762.1557@compuserve.com.

QUICK BYTES

Supra NetCommander has plug-and-play connectivity for remote users

INTERNAL ISDN ADAPTER

Supra NetCommander ISDN

T he Supra NetCommander ISDN, from Diamond Multimedia Systems Inc., is an easy-to-install, inexpensive internal ISDN adapter that's ideal for those who use the Internet often or connect to a corporate network that uses a remote LAN access solution such as Shiva's LanRover with ISDN Basic Rate Interface modules.

Installing the NetCommander and getting it to work was the easiest ISDN installation I've experienced to date. The adapter includes all the necessary drivers, such as Microsoft's ISDN Accelerator Pack and Internet Explorer. I simply inserted the adapter into my computer and used the wizard-driven installation to get the board working in less than 15 minutes.

If you don't already have ISDN service, clicking on the Order Form button brings up an ISDN

The Supra NetCommander ISDN displays connection status with phone numbers and data throughput.

service order form. Subsequent wizards ask for Service Profile Identifier numbers, switch type, and phone numbers. The installation program also loads a small

utility for further configuring and monitoring the adapter.

Most notable among the NetCommander's features are Multilink Point to Point Protocol support for

combining both B channels as well as a port for such analog devices as telephones and fax machines. Best of all, NetCommander supports bandwidth-on-demand control.

For example, by default, NetCommander uses only one 64Kbps channel. I configured instances in which the second B channel would automatically kick in.

My only gripe is that I couldn't resize or minimize the NetCommander interface. Also, though I could see the connection status during a call session from the main program, I would have preferred a utility that graphically represented the status and activity of each B channel.

— *Diamond Multimedia Systems Inc., San Jose, Calif.; (408) 325-7000; $299 (estimated street price).*

— *Andre Kvitka*

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▶ Ethernet protocol analyzer

Shomiti provides network control with restraint

By Laura Wonnacott

FAST ETHERNET has come into its own. Shared networks have become switched, and formerly 10Mbps networks now run at 10 times that speed. Management tools to troubleshoot and maintain these high-speed connections haven't kept pace, though.

Most traditional analyzers don't support 100Mbps or switched environments. Not only does Shomiti Systems Inc.'s Century LAN Analyzer do so, it also can capture and generate network traffic at line speed. In addition, this product can view switched network activity, most notably traffic across Fast Ethernet full-duplex segments.

Shomiti offers a unique dual solution that combines software and hardware, as well as a software-only product. Shomiti's combined software and hardware solution is one of the best I've seen for troubleshooting protocol-related problems in today's fast environments.

The Century LAN Analyzer 10/100 Ethernet Media Module contains the same silicon used in producing Ethernet switches. The card installs easily in any full-size ISA slot.

When combined with the Century LAN Analyzer Gold software, the module allows you to capture and generate traffic at line speed in Fast Ethernet environments. You can select a card with either a 4MB or 16MB buffer to capture data. A single PC system can contain as many as eight media modules.

Though the Century LAN Analyzer Gold software runs with or without the media module and supports both 10Mbps and 100Mbps networks, the software alone can't capture data at line rate in a Fast Ethernet environment.

In addition, the software runs only on the network driver interface specification under Windows 95.

Capturing traffic using the Century LAN Analyzer Gold software couldn't be simpler. The capture tools provide meaningful information, such as receive counters, utilization rates, and error counters. Creating a capture filter to sift data is also extremely easy to do. You can filter on just about anything, as long as it's packet-related.

Once you have captured the data, clicking on the module-card capture screen brings up the data. The interface provides the standard

CENTURY LAN ANALYZER'S traffic generator lets you create complex traffic streams to test your network and networking devices. You also can generate traffic from the captured buffer.

seven-layer decodes of many protocols, including TCP/IP, NetWare, and AppleTalk. I was quite impressed with all the options to view the data, such as by packet, media access control (MAC) address, or network.

I could easily change between the different views. Also, I was able to view the data by either MAC or network conversation pairs. I found this option helpful in troubleshooting connections between a client and a server.

In addition to all the ways to view captured data, I also could easily show protocol distributions graphically.

Century LAN Analyzer Gold includes a traffic generator. I could transmit traffic based on specifications I had built or transmit directly from a capture that had been loaded into the buffer.

Building a transmit specification is straightforward. There's no need to know what hexadecimal code corresponds to what packet type. Simply choose such items as packet type, packet size, and data from the pull-down menus. Setting options for the stream and transmission modes is also easy.

Besides coming with Shomiti's Century LAN Analyzer Gold software and its 10/100 Ethernet Media Module, the system included the Century Tap, a hand-held wiring tap or multiport device that is inserted between full-duplex connections. The Century Tap allows the Century LAN Analyzer to capture traffic between full-duplex 10/100-Mbps connections.

The Century Tap was incredibly useful in viewing traffic from server to switch and from switch to switch.

Laura Wonnacott is technical manager at the InfoWorld Test Center. She can be reached at laura_wonnacott@infoworld.com.

▶ Switching hub

TigerSwitch is a strong workgroup contender but lacks expandability

By Jeff Symoens

THE TIGERSWITCH XFE, from Standard Microsystems Corp. (SMC), is worth a look for midsize organizations in need of a hub that supports both Ethernet and Fast Ethernet. At $3,390, the TigerSwitch is a great buy.

(Yes, SMC did sell its TigerSwitch XE product to Cabletron Systems Inc. last year, but it has recently re-entered the low-end switch market.)

From the outside, the TigerSwitch is fairly basic. There are 16 switched 10Base-T Ethernet ports and one 100Base-TX Fast Ethernet port. The unit has a single LED for each port, tracking link status and activity. In addition, there is a nine-pin serial port for accessing terminal-based (out-of-band) management.

The TigerSwitch fits in well with SMC's TigerStack line of stackable workgroup hubs, because the TigerSwitch allows for microsegmentation of as many as four separate collision domains (seven ports each) per unit. This capability allows you to use the TigerSwitch as the perfect hybrid between large port density workgroup segment switching and desktop switching, in which each client gets its own dedicated switched 10Mbps port. The result is a number of low port-density segments flowing into the switch, which lets you effectively manage your bandwidth without having to go to desktop switching.

The TigerSwitch uses a store-and-forward architecture and has a 2MB, dynamically allocated packet buffer to handle packet overflow. This means that the packet buffer is shared between the ports. And if one port needs more buffer space, it can get it from the 2MB aggregate pool.

The product's address table supports 16,000 media access control (MAC) addresses per switch, offering a bit of device capacity.

The downside of the TigerSwitch is that it lacks any expansion module support; there are no expansion bays. Furthermore, if you want to stack multiple devices, you'll have to use the only 100Base-TX port on the switch, because there is no high-speed data crossbar.

This allows you to stack only two units with no connection to the backbone, leaving you shopping for a 100Mbps switch.

Managing the TigerSwitch menu-based terminal was fairly easy. I accessed the unit's built-in SNMP management module out-of-band using an ANSI-based terminal emulator and a null-modem cable. I did quite a bit of management from the out-of-band terminal session, such as performing basic configuration, as well as viewing port and unit statistics.

I also could enable security restrictions by filtering MAC addresses at the port level.

Although the TigerSwitch offers fairly powerful management capabilities, you'll have to wait for Version 4.4 of SMC's EliteView management software to get graphical distributed management from the TigerSwitch.

Currently, the SMC hub does not support virtual LANs or RMON but does offer a port-mirroring capability, which lets you use an RMON probe or protocol analyzer to monitor other ports on the switch.

Though this feature works only with the 10Mbps Ethernet ports, it is a welcome addition.

Jeff Symoens is a technology analyst at the InfoWorld Test Center. He can be reached at jeff_symoens@infoworld.com.

THE TIGERSWITCH XFE has 16 10Base-T Ethernet and one 100Base-TX Fast Ethernet ports.

Meridian, Micro Design provide versatile, scalable CD-ROM sharing

By John Marshall

NETWORK MANAGERS looking for a way to distribute CD-ROM media effectively and efficiently to their users should look at two options. Meridian Data Inc.'s CD NetLink Miniserver 7 and Micro Design International Inc.'s (MDI's) CD-Express Connect each provides a versatile and cost-effective way to add CD-ROM sharing to your network.

The CD NetLink Miniserver 7 offers the advantage of superlative client and administrative software but works only over NetWare networks. The CD-Express Connect, however, works over Network File System (NFS), Telnet, and the World

connect to the unit.

The CD NetROM Subsystem features seven Toshiba XM-5401B 4X CD-ROM drives housed in a minitower case. The system is complemented by two internal cooling fans and an additional fan housed in the 250-watt power supply.

Meridian includes its superior CD-Net Plus software with the unit. CD-Net Plus includes the software necessary to configure the CD NetLink and provides client software for DOS and Windows 3.x workstations. The unit also includes CD-Net Tools for management.

For $495, you can purchase CD-Net Tools Pro, which provides additional in-depth CD-ROM status and performance statistics, system usage statistics, and active and inactive user connection times.

The CD NetLink employs a peer-to-peer server approach for sharing CD-ROMs on a LAN. Users send CD-ROM requests directly to the unit without involving the NetWare server.

The unit is actually a diskless workstation that uses NetWare's remote-program load function. The CD NetLink accesses a boot-image file located in the server's Login directory. (Support for Novell Directory Services and Windows NT is planned for the third quarter.)

Users can access the CD-ROM drives in several ways. Using the CD Map application, users can map drive letters to CD-ROM drives. As with CD-Express Connect, you can group multiple drives under one drive letter. From Meridian's CD Admin software, you can configure application databases to store drive mappings and start-up commands for CD-ROM programs. End-users can access this database using the CD Menu software.

MDI's CD-Express Connect houses seven Toshiba XM-3701B 6.7X CD-ROM drives. The internal processing unit emulates a NetWare 3.12 server and includes a SCSI-2 controller, a DB-9 serial port, and a 10Base-T/AUI network port. The power-supply fan provides the only cooling to the unit.

Clearly labeled LED status indicators are mounted on the unit's front bezel. (The CD NetLink also includes status LEDs, but they're located for easier identification.) The CD-Express Connect not only supports users in a NetWare envi-

ronment, it also supports NFS and Web users.

MDI includes several unique ways to configure and manage the unit. Express Admin, MDI's Windows 3.x-based software, comes bundled with the unit. You also can configure settings with a Telnet session, a

CD-Express Connect's Administration program is easier to use.

Web browser, or the DB-9 serial port using a terminal or terminal software.

I chose to use both Express Admin and Netscape 2.01. The Web portion of the product was outstanding. From a Web browser, I configured server parameters, users, and groups; rebooted the server remotely; and, using an HTML editor, changed the Web server's default home page with my own custom index page.

I tested both units in a NetWare 4.1 environment. I configured my client workstations with Windows

95 and the NetWare Virtual Loadable Module 1.21 client. CD-Express Connect was the easier of the two products to set up.

The MDI unit appeared on the network as a function-al NetWare server. I installed Express Admin to configure users and groups and initial server settings. I continued to create more users from the Web browser and view data from my mounted CD-ROMs via Netscape.

The best way to configure my clients was to create a group mapping to the unit's SYS volume. When users select the predeter-

THE WINDOWS-BASED administration programs for both units allow for easy configuration.

mined drive mapping, they access each CD-ROM as a subdirectory from the root of SYS. Of course, with Windows 95, it's just as easy to select the unit from the Network Neighborhood and navigate to your CD-ROM of choice.

Setting up CD NetLink was more involved. The unit offers more customizable server options, a unique CD-ROM application database routine, and better management.

I was impressed with the unit's drive locking and drive-load balancing options. Drive locking will secure the CD-ROM drawer and keep users from removing or switching the CD-ROMs.

If one of your CD-ROM titles is

WITH CD-EXPRESS CONNECT, you can use almost any World Wide Web browser to perform system administration from the Internet.

heavily used, purchasing an additional copy and enabling drive-load balancing lets the server redirect read requests to the second drive.
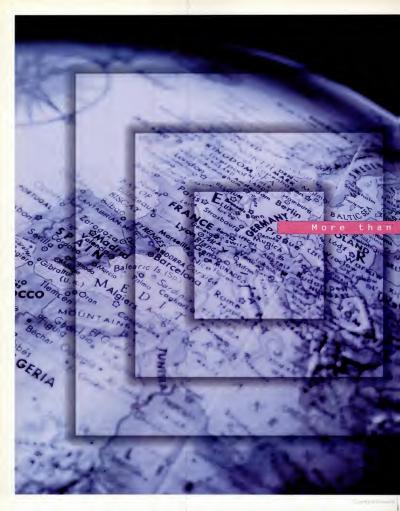
After setting up the CD NetLink and CD NetROM hardware, I used the Meridian CD-Net Plus software to configure the unit. I had a slight problem during the initial installation process. The program informed me that I was not connected to any server, and, when I tried the Connect To Server option, I was told the log-in attempts had failed.

I reconfigured my Windows 95 client to use the Microsoft Windows NetWare client software and enabled bindery emulation in the context in which my server resided. I needed bindery emulation anyhow because the CD Access application required it to access NetWare user-account information. This was the right mix to get the installation software to recognize my NetWare file server and complete the setup.

It did cause problems, however, with the CD-Net applications. I used the 32-bit NetWare client software for Win95 and then removed the previous installation and performed the setup again, after which the unit functioned smoothly.

John Marshall is an information systems manager at Federal Computer Week. He can be reached at john_marshall@fcw.com.

Wide Web as well as NetWare, but it lacks the sophisticated management tools of the Meridian unit has.

The CD NetLink Miniserver 7 is housed in a small plastic enclosure (approximately 6.5 inches by 7.5 inches by 1.5 inches). The unit contains a single-board computer system complete with memory, a SCSI-2 interface, and a 10Base-T Ethernet port. Power is provided by an external power adapter.

You can connect almost any standard SCSI-2 drive-array system to the CD NetLink, though it does not support logical unit numbers. (Support is due in the third quarter.) I used the CD NetROM Subsystem to

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LAN TALK · PAUL MERENBLOOM

Intranets don't ease bandwidth needs in many corporations

I'VE ABOUT HAD IT with the buzzword *intranet*. People are talking about the intranet as though it were a brand-new discovery and the best thing since sliced bread. Well, in my not-so-humble opinion, I think this new fad is a bunch of bunk.

Folks like us have been using TCP/IP as a core protocol for more than 10 years now, and only since the Internet (that's the one with the e in the middle) became a household name has the rest of the world discovered the value and power of IP.

So, faced with a new set of tools vis-à-vis the HTTP, Java, and SET/SSL languages and protocols, the world has declared that the intranet will be the next big phenomenon, right?

From my point of view, the designation of TCP/IP as a primary communications protocol is a good — no, make that a great — move. If a network architecture can be designed based on a confluence of homogeneous elements, the network will be much easier to implement, get online, and maintain. IBM's recent support for TCP/IP has been one of the best moves from that company in a long time.

No matter what you want to call internal networks that are connected, one thing becomes painfully clear: Network administrators' jobs are about to get substantially more complex as the lines that separate the mainframes, the minicomputers, and the PC/Mac LANs and WANs fade away.

What does this mean for us? That's simple: A lot of work. Integrating multiple networks into a single intranet isn't necessarily technically difficult, although the greatest issue we're likely to face is in finding sufficient bandwidth.

Take a bank, for instance. One that I'm working with now has about 100 branch offices that all have dedicated leased lines back to one of two computer operation centers. (These centers are linked by high-speed, redundant fiber.) Currently each branch has between two and five dedicated circuits, usually configured for 56Kbps to 64Kbps each. Line one is for the branch's terminals to talk to the mainframe; line two is a backup for line one; line three is for the bank security system's communications and monitoring, and line four is for the automated teller machines. In some cases, line five is either a backup for the others or used for voice and data traffic.

So one branch equals at least three to four connections, at $500 to $1,000 each per month, with an aggregate bandwidth of about 256Kbps. Now add the intranet and big, new multimedia- or Web-based applications, groupware, objects, etc. A rough calculation of application usage and operating requirements gets the bank nearly 128Kbps in sustained data rates and peak usage rates between 256Kbps and 384Kbps. Seems to me we are nearing T1-capacity requirements due to the availability of data with our now-integrated intranet.

The logical solution (at least to me) is to use frame relay. Although we understand that frame relay is a much lower-cost alternative to dedicated leased lines, keep in mind that frame relay is not necessarily good news to the phone companies. Why? Turning up frame relay circuits usually means turning off dedicated leased lines (with their guaranteed cash flow to the Baby Bells). In this regard, frame relay and ISDN are bad words to the phone companies.

In the case of the bank, we calculated that the branch system could employ frame-relay service at full-bandwidth requirements for less then half the cost of expanding capacity using the leased lines.

Paul Merenbloom is vice president, technology research at Piper Jaffray, in Minneapolis. You can reach him at plmeren@mcimail.com.

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ANNOUNCED

TRAVELING SOFTWARE INC. is tapping into The Wall Street Journal (WSJ) Interactive Edition to sell its WebEx software enhancement that lets users download Web pages to their hard drives. Users who purchase WebEx, in retail stores Aug. 15 priced at $30, will receive a two-month free subscription to The WSJ Interactive Edition. In addition, current subscribers to The WSJ Interactive Edition can download a free, custom version of WebEx that will let users take WSJ news on the road by automatically loading WSJ sections onto their hard drives. (800) 343-8080.

SHIPPING

Two high-speed modem offerings designed for corporate users are now available from BOCA RESEARCH INC. Boca's Pro16 Corporate Modem offers data transmission rates of 28.8Kbps and supports fax transmissions at a 14.4Kbps rate. Priced at $549, the modem offers support for synchronous and asynchronous communications, dial-up and leased lines, DES encryption, and as many as 600 password-protected user accounts. The Pro16 Rack System supports as many as 17 modems and can run Boca's SNMP software management tool, for $979, to manage eight Rack Systems. A system with 16 modems and a single power supply costs $8,949. (407) 997-6227.

ACQUIRED

CHARTER COMMUNICATIONS INTERNATIONAL INC. will expand the computing resources with the acquisition of TeleCommute Solutions, a remote computing services provider. (713) 486-8337.

Competition heats up for remote access

■ Cisco acquires Telebit to boost offerings and put pressure on market leader Shiva

By Stephen Lawson

LARGE NETWORKING vendors are eager to steal market share in the remote access arena from Shiva Corp., as reflected in Cisco Systems Inc.'s acquisition last week of Telebit Corp., a manufacturer of modems and ISDN devices.

But as a pioneer in the market and still the dominant player, Shiva doesn't plan to cede sales without a fight.

As remote access evolves from a niche technology for a few users to a critical requirement for mainstream applications, large LAN/WAN vendors such as Cisco and 3Com Corp. have expanded their offerings out from the center of the enterprise, said Bobbi Murphy, a principal analyst at Dataquest Inc., in San Jose, Calif.

For example, Cisco plans to integrate Telebit's ISDN modem technology into its 2500 departmental access servers and the AS5200 series Universal Access Server. Cisco officials said that with the Telebit technology, the servers will be capable of taking in both analog and ISDN calls, automatically sensing the type of connection.

To compete with such offerings,

Shiva is having to work to deliver more scalable and sophisticated hardware. But the company is also counting on its long-standing reputation to maintain a hold in the marketplace.

Shiva first began shipping remote access products in 1987 and currently holds a commanding share of the market for remote access servers, which host low-speed connections for telecommuters, small offices, and users on the road.

The flagship of the company's server products is the LANRover Access Switch, introduced this year, which supports more than 100 simultaneous calls. Shiva also makes client software for remote PCs and recently began shipping its Access-Port ISDN client router.

Users and analysts say years of

experience give Shiva an edge in its core technology.

"One of the biggest things going for [Shiva] is ease of installation," said Dave Brown, director of the network services division at The New York Times Inc., in New York. "The product works pretty much out of the box."

In addition, Shiva was among the

Interest grows in Psion's EPOC OS for PDAs

By Carolyn A. April

SEEKING TO BROADEN its reach in the mobile hand-held market, Psion Plc. Inc., in London, has begun licensing the software that forms the foundation of its successful 3a personal digital assistants (PDAs).

Though declining to be specific, Nick Twyman, Psion's U.S. OEM manager, in Burlingame, Calif., said a number of licensing discussions are ongoing and that users can expect to see hand-held products based on the EPOC OSes at the start of next year. One industry source who watches the hand-held market

said Psion's OS may find its way into a hand-held device by IBM; IBM declined to comment.

In addition, last week Digital Equipment Corp. and Cirrus Logic Inc. announced that their respective RISC-based processors for PDAs will support Psion's EPOC OSes and application portfolio. However, both companies declined to comment on whether they planned to develop products based on the chips and Psion's software.

Some industry analysts view Psion's licensing decision as a strategic precursor to a comeback of sorts

in the PDA market during the next year. Expected to lead the reincarnation of the PDA is Microsoft Corp., which is due to release its hand-held OS, code-named Pegasus, this fall.

"What's going to happen in the next six months is we'll see seven OSes and 14 vendors begin to play in the PDA and smart phone market," said Andrew Seybold, editor in chief of The Outlook on Communications and Computing, a newsletter based in Boulder Creek, Calif.

Companies expected to enter the market include Compaq Computer Corp., Hewlett-Packard Co., and Casio Computer Co., analysts said.

Formerly proprietary, Psion's 16-bit EPOC/16 OS and productivity applications are now available to hardware vendors and OEMs looking to manufacture PDAs, subnotebooks, and smart phones, an intelligent terminals, and mobile Web browsers, officials said. Applications include word processing and spreadsheets. Psion will also license its forthcoming 32-bit EPOC/32 OS, due by year's end. License pricing was unavailable.

"Licensing is an effective way to enter new markets we might otherwise have not had the resources to get into," Twyman said. "And with many businesses trying to get into the [PDA] market, we'd rather they did it with our OS."

In 1995, Psion's 3a line of palm-tops held the No. 1 spot in the PDA market, with a 33 percent share, according to Forrester Research Inc., in Cambridge, Mass.

Psion can be reached in the United States at (415) 373-3224.

> ■ Psion hopes licensing of its personal digital assistant (PDA) software will kick-start the stalling PDA market.

Site management

ANS expands network services portfolio

By Tom Quinlan

CORPORATIONS NOT wanting to take on the headaches of remote networking and Web site management can turn to ANS, an America Online Inc. subsidiary that provides network management services.

ANS is adding to its lineup standardized solutions for customers planning and managing WAN-based internetworks and Web sites.

Core to both offerings is a promise to provide connection availability of at least 99.5 percent, with even higher levels guaranteed at slightly higher prices, ANS said.

The company's internetworking solution, the Virtual Private Data Network Service (VPDN), is designed to handle everything involved in connecting WANs to a company's central facility, said Vimal Solanski, product marketing manager for the service.

With VPDN, users are provided all of the necessary infrastructure,

including data encryption and access to dedicated transmission lines, ranging from 56Kb to T3 levels, Solanski said. The service works with a company's existing infrastructure and networking protocols, including TCP/IP, IPX, Apple-Talk, and Vines, to provide a round-the-clock, managed solution.

VPDN includes the design and implementation of a WAN. Pricing starts at $2,800, which includes communications servers, encryption, and a T1 line, Solanski said.

The Internet services ANS is rolling out do everything to enable a customer to create, maintain, and manage a Web site, said Mitch Ferro, product marketing manager for ANS' Web Hosting Services. The services' emphasis is on creating mission-oriented solutions that are considered a key part of the company's business plan, Ferro said.

For a base-level fee of $2,500, ANS will set up a dedicated server,

which can have three discrete Web sites, provide data storage at ANS' disk farm, and help in creating and maintaining the Web-based data. Usage, including the number of users and the amount of data downloaded, will determine the actual cost, but the initial fee includes the 99.5 percent uptime guarantee.

That guarantee only covers the portion of services that ANS is responsible for, but if services go down because of ANS equipment failure, users will receive free connection time equal to twice the length of the server downtime.

The Web Hosting Services and the VPDN Service are just the latest site-management programs offered by Elmsford, N.Y.-based ANS. The company has already announced its Intranet Solutions program, in partnership with Hewlett-Packard Co., and its SureRemote Service for managing remote and mobile links.

ANS is at (800) 456-8267.

PowerBook PC Card

Motorola delivers cellular fax/modem

HIGH-SPEED WIRELESS communications are arriving for Apple Computer Inc's PowerBooks, courtesy of Motorola's Computing Products Division.

Motorola is now shipping its cellular Montana PC Card fax/modem for the PowerBook 190 and 5300

THE MONTANA PC Card combines cellular and fax/modem features.

portable lines, officials said.

With a list price of $289, the modem offers a data transfer rate of 28.8Kbps and a 14.4Kbps fax rate. It supports the V.34 data transmission standards, as well as V.42bis and V.42 for data compression and error checking, respectively.

The modem also incorporates the Enhanced Throughput Cellular error correction protocol for wireless transmissions, officials said.

According to Motorola, Montana is only the first step in an effort by the company to provide a full range of PC Card products for the Macintosh line.

The next product is expected to be the Mariner, a multifunction device that combines Montana's cellular fax/modem capabilities with a LAN adapter, officials said. The Mariner is due to ship later this summer; pricing is not yet available.

Motorola, in Schaumburg, Ill., can be reached at (800) 427-2624.

— *Tom Quinlan*

Attachmate teams up to offer RLN

■ Joins with GDC, CommVision for integrated solutions

By Deborah DeVoe

COMPANIES SEEKING turn-key remote access solutions can look to Attachmate Corp., which has teamed up separately with General DataComm Inc. (GDC) and CommVision Corp. to package Remote LAN Node (RLN) software with hardware devices.

Attachmate will announce this week that it is working with GDC to deliver in late September SpectraComm RLN, an SNMP-manageable modem chassis jointly designed by the two companies that will incorporate RLN remote access software.

ATTACHMATE AND GENERAL DATACOMM will jointly deliver the SpectraComm RLN, a remote access modem system.

The device will make it easier to implement a remote access system, allowing as many as 64 ports to be connected simultaneously with one cable, said Mark Monday, director of product management at Bellevue, Wash.-based Attachmate.

The product will also ease system management, Monday said.

"With this solution, if one modem goes bad, you simply pop it out and plug in a new one. It makes it easy to troubleshoot, and you never have to turn the system off," Monday added.

The SpectraComm RLN, based on the SpectraComm 5000 line, can support 64 phone lines or two T1/E1 connections. Pricing has not been finalized, officials said.

Earlier this month, Attachmate joined forces with CommVision to deliver a CommSwitch server that includes RLN software.

The CommSwitch RLN, due to be available in August, is a remote

access system that can support as many as 240 asynchronous lines, 115 ISDN sessions, or 80 X.25 sessions, officials said. Pricing starts at $31,000 for a base unit with a 32-port RLN.

Users can also opt to add RLN Application Server software to the CommSwitch RLN, which would enhance application performance when running a remote session, according to Attachmate officials. Base pricing for RLN Application Server starts at $4,995 with support for 15 simultaneous users.

Attachmate will share in the sales, marketing, and support of both the SpectraComm RLN and CommSwitch RLN, officials said.

Attachmate can be reached at (800) 426-6283. GDC, in Middlebury, Conn., can be reached at (203) 574-1118. CommVision, in Mountain View, Calif., can be reached at (800) 832-6526.

IPC and Time Warner interact to bring hotels data services

IPC INTERACTIVE INC. joined forces with Time Warner Cable of New York this month to bring interactive technology, services, and content to New York hotels.

The agreement will enable Time Warner Cable to enhance its existing services to New York hotels with the launch of the Time Warner Quantum Hotel Network, company officials said.

The network will use IPC Interactive's Guestserve system, which is based on IPC's Media Threaded Interpretative Language software platform, to provide hotel guests with in-room video-on-demand entertainment and interactive video services from a single networked distribution point.

Initially, services will include cable television channels, pay-per-view services, on-screen account review, checkout, and video messaging, as well as room service ordering and visitor information guides.

In the future, other services, such as Internet access and shopping, will be provided, according to company officials.

IPC Interactive's Guestserve system is already in use in more than 70,000 hotel rooms worldwide, including the 5,000-room MGM Grand Hotel in Las Vegas.

IPC Interactive is the U.S. subsidiary of Singapore-based IPC Interactive Ltd.

The company, based in Novato, Calif., can be reached at (415) 382-1400.

— *Terho Uimonen, IDG News Service, Taipei, Taiwan*

Screen phone

StarScreen can do it all — phone, fax, and 'net

By Deborah DeVoe

AIMING TO PROVIDE basic remote office functionality at a low cost, StarTronix Inc. will deliver this September its StarScreen, a screen phone that provides Internet, phone, and fax capabilities.

The device consists of a telephone with a handset, a speakerphone, a built-in digital answering machine, a magnetic stripe reader for credit card transactions, and a 10.4-inch color VGA display.

Based on a 100-MHz 486DX4 processor, the StarScreen will be able to run standard Internet software and will also support basic applications, such as word processing, officials said.

The screen phone will also enable users to send and receive e-mail and faxes.

StarScreen comes standard with a 200MB hard drive, 4MB of RAM, and a 28.8Kbps fax/modem. A parallel port, two serial ports, and an external VGA port are provided for attaching peripherals, such as a keyboard, printer, or a larger, CRT-based display.

Irvine, Calif.-based StarTronix plans to support Caller ID and voice

calls over the Internet by year's end. Voice mail and one-way and two-way real-time video calling over standard phone lines are due in 1997. A video camera add-on will be available in January 1997, expected to cost about $400.

StarScreen will be provided free as part of a monthly service contract; the basic monthly fee will be $60, which includes unlimited Internet access and access to StarTronix's online services, officials said.

StarTronix can be reached at (714) 474-6156.

Shiva

first companies to support Novell Inc's IPX, Apple Computer Inc's AppleTalk, and the dial-up component built into Microsoft Corp.'s Windows 95.

Brown further praised a Shiva dial-out client for Windows 95 that allows users at a central office to dial out through a LANRover without the need for a separate modem and analog line at their desks.

But when the Times decided to buy ISDN remote access servers, it turned down Shiva's offerings in favor of router products from Cisco. Brown said he wanted to be able to fine-tune the router's response to transmissions. He can set Cisco's 750 and 1004 routers to bring up a connection only when they receive messages from a certain address.

"The only people who knew how to do this were the routing companies," Brown said. He added that Shiva and other remote access companies also could not match Cisco's worldwide support

infrastructure.

"Shiva's biggest problem is that they're facing serious competition from companies that are outresourcing them," Datquest's Murphy said.

"Shiva has competed well in the eight-to-48-port market and now has its first 100-port box," Murphy said. "But soon there will be boxes that support 500 to 1,000 calls at a time."

Many of these large-scale devices are expected to sit at the premises of Internet service providers (ISPs), where, observers say, many compa-

nies will soon turn for large-scale remote access capabilities. ISPs will save companies money while eliminating the difficulties of managing another network infrastructure.

One attempt by Shiva to address the up-and-coming competition is a recently formed relationship with Northern Telecom Inc. The companies are now shipping an access switch for large enterprises that supports 112 simultaneous calls. They have also developed a device that supports as many as 670 calls using a Northern Telecom carrier switch.

Nothing is more haunting than a voice from the past, unless it's your own voice

We've heard this week's gripe before, but it's taken on a few added twists. Late last year, a man we'll call Mr. Blue received a very nice Christmas present from his colleagues at the East Coast bank where he works. They took up a collection among themselves and raised some $4,000 to allow him to buy

a high-end notebook computer for his teenage son. The reason for their generosity was that Mr. Blue's son is suffering from a serious form of cancer that requires aggressive treatment, confining him to a hospital bed for long periods of time during which a notebook computer would be a true blessing.

Unlike most of you, Mr. Blue doesn't buy computer equipment for a living, but he did a lot of research

and settled on an Austin Direct 100-MHz Pentium model with an 11.3-inch active matrix color display as the machine that would deliver the most bang for his bucks. He'd also learned, as we found in our recent discussion (see "Vendors advertise speedy notebooks, but you might have difficulty finding one," April 22, page 62), that ordering a high-end notebook and getting a high-end notebook are two very different things these days. He explained the special circumstances to the Austin Direct salesman.

"He was very understanding, even lending us an older laptop for a few months while we waited," Mr. Blue said. "When the next shipment finally came in, he even moved us up in line so that we got one of the first ones in that batch. At the point the machine arrived in April, I was ready to write a letter praising Austin Direct to all the magazines."

There was just one very little problem. The first time Mr. Blue's son turned on the machine, he could see one pixel near the center of the screen that was always yellowish.

"Yes, it's just one pixel, but he can see it when he's running most of his programs, and it bothers him," Mr. Blue said. "And that makes me feel guilty, so I wanted to get it replaced with a good screen."

Mr. Blue was astounded to find that Austin Direct would not replace the display or exchange the computer for one that didn't have the problem.

"They seemed to be affronted that I would be upset with one bad pixel," Mr. Blue said. "In order to exchange it, they said the screen would have to have four or five pixels in the

same square inch, or 13 bad pixels overall. I couldn't believe it. This kid's fighting a battle for his life; he doesn't need to be fighting a battle over a pixel."

Austin Direct did offer to let Mr. Blue return the unit and give him his money back.

"It's true they offered to give us our money back" even if he could not return the unit within the 30-day guarantee period due to the length of the hospital stay.

"But that's not the ending I was looking for," Mr. Blue continued. "We'd just have to go buy another machine from somebody else and my son would be without a computer for who knows how many months. And, except for this one little problem, he loves the computer, and it makes a big difference in keeping his spirits up while he's in the hospital."

Although Mr. Blue's position is pretty clear, you may be wondering how I came to be involved in this case. He is not an *InfoWorld* reader, so why would he call the Gripe Line? The answer is that Austin Direct more or less sent him to me. In the course of their discussions about the bad pixel, Austin Direct technical support sent him a copy of a column I did almost three years ago (see "IBM special offer: With 14 bad pixels you get a new screen," Oct. 25, 1993, page 49) about an IBM ThinkPad user who couldn't return her machine because it had only four bad pixels.

I'd discovered at the time that most other laptop manufacturers had similar policies, so Austin Direct had apparently sent the column to Mr. Blue as proof that it was following standard practice in the industry.

Ouch.

Next week we're going to have to have a little talk with Austin Direct. If it wants to be the grinch who stole Christmas, I'd at least prefer that the company not drag me along.

Ed Foster's Gripe Line examines product quality, customer service, and sales practices. Send gripes to gripe@infoworld.com or call (800) 227-8365, Ext. 710. Join his New Gripes forum on InfoWorld Electric at http://www.infoworld.com.

THIS WEEK'S LETTERS showed that our readers are thinking about the future of technology, often in drastically different ways. One reader heartily agreed with Stewart Alsop's ideas about WebTV, while another took the opposite point of view. Another, responding to a column by Nicholas Petreley, expressed hope that object orientation could be integrated with other technologies to the benefit of all.

WebTV — will it work?

STEWART ALSOP was right on about WebTV. [See Distributed Thinking, July 15, page 102.] People don't want to turn their TVs into computers. Most people don't even know what that means. And if anyone out there does, call me.

Although people may or may not want to just surf the Web, there are things they want to access — movie and TV listings, sports, and other news. They also might want to use the AT&T 800-number directory. TV Guide (http://www.tvguide.com/tv/) has its own Web page; so does the AT&T 800 directory (http://www.att.net/). The MovieLink (http://www.movielink.com/) site is also valuable.

The content is out there. We just need a company like WebTV to allow safe access to the Web through individual TVs. And I mean we need something better than current filtering systems — possibly only allowing access to WebTV-approved sites. Perhaps WebTV can license a lot of the content for its own servers or set up a proxy server with a huge cache. Or perhaps WebTV-approved sites can be one security option, a commercial filtering system another, and wide-open Web access a third.

Bill Poitras
San Diego
bill@msi.com

THE WEBTV IDEA will not fly. The American psyche is programmed with the idea that television is used for one thing: viewing. The only interaction is changing the channel. If you want to do something else, buy the specific appliance for it. (Note: Zenith introduced the TV/telephone [System 3] more than a decade ago. It was a cool concept — a speaker phone before its time, but it failed miserably.)

QUICKPOLL

Data mart?

Data warehousing tools have become widely available. **Do you plan to implement a form of data warehousing in the next year?** *(Respond by Aug. 2.)* Thanks to Christopher Winslow for this question.

To register your opinion, call **(800) 713-INFO** or visit **http://www.infoworld.com**.

Re: Provide Web access

IS departments are feeling the heat as end-users demand access to the World Wide Web. In our July 15 issue we asked (page 66): Do you plan to install Web browsers on most desktops in the next year?

YES 76% NO 15%

The same will happen with the WebTV. If people want to surf, they will use a computer because that's what they use now. I totally agree with Alsop regarding the Network Computer — it's a dud concept. [See Distributed Thinking, March 4, page 106.]

Moreover, the economic and possibly social theory of increasing returns tells us that it is difficult to penetrate markets where lock-in has already occurred. If TV browsing is not compatible with the current Netscape, Microsoft, and other browsers, it will be extremely difficult to dent the current browser market with something else, unless the technology is outrageously superior and inexpensive. And I don't believe WebTV is.

Bhavin Trivedi
New York
bhavin_trivedi@smb.com

Pentiums? Don't need 'em

BEING RESPONSIBLE for computer technology, including purchase recommendations, I have maintained that our requirements for PC platforms do not require Pentium processors. I did not say they wouldn't be nice to have. For the past three years, I have stood firm in specifying the 486 DX2-66 MHz as the general-purpose workhorse.

Now I must submit my purchase recommendations for our upcoming conversion to

ALL THE TECHNOLOGY **— LOW-**COST PCS, FASTER CHIPS, ETC. **— MEANS** NOTHING IF WE CAN'T DELIVER ACTUAL WORKING SYSTEMS (A.K.A. SOFTWARE) FOR OUR BUSINESSES.

Jeff Wolfers
Buffalo, N.Y.

a Unix LAN/WAN from a Digital mini and ASCII terminals. My first hurdle was to nuke out terminal servers and ASCII terminals as processing platforms for our end-users. Across-the-board PC replacement, with 486 DX2-66 machines, was within 10 percent of the proposed expenditure. Plus, I could say we would be positioning ourselves for the 21st century instead of renewing 1980s technology for another 10-year engagement.

Enter *InfoWorld*. The article "Memory matters" confirmed my beliefs and made me so **glad** I have stood my ground. [See July 8, page 1.] I imagine that — a 486 with a single-memory upgrade winning over Pentiums and 586 processor upgrades, all things considered.

Now I am confident that sticking with my usual processor of choice, which has become a bargain-basement commodity, and equipping it with 16MB of RAM, a modest video card, and a gigabyte hard drive will be the equivalent of placing Pentium 133s on every desktop.

Thank you again, *InfoWorld*, for allowing me to give my organization Pentium performance at plain-wrap pricing.

T. A. Jakubowski
El Segundo, Calif.

OO has niche on the 'net

INTERESTING, ISN'T IT? Object-oriented technology, so long hidden away and relegated to the scrap heap by naysayers, may have finally found its audience in the Internet. [See From the Ether, July 15, page 60.]

Think about it. C++, Smalltalk, Java, and even Visual Basic have taken the software development industry by storm just as IP has taken the network space. Perhaps the two together will produce the synergy needed to allow MIS organizations to finally deliver projects that meet needs and expectations.

All the technology — low-cost PCs, faster chips, etc. — means nothing if we can't deliver actual working systems (a.k.a. software) for our businesses.

Jeff Wolfers
Buffalo, N.Y.
jwolfers@ns.moran.com

Proprietary Microsoft

I ENJOYED Michael Vizard's column on Microsoft's plan to destroy Netscape. [See From the News Desk, July 8, page 3.] I especially enjoyed the third-to-last paragraph where he says, "it doesn't look as though Microsoft will actively support either the Java Beans communications protocol or the CORBA specification."

I hope that Microsoft's current strategy to not follow the software industry's object standards will awaken most organizations seeking the ultimate enterprise network — one that is interoperable, heterogeneous, and hardware-, platform-, and operating system-independent. Why? Because I believe Microsoft will not build or allow the information industry the ultimate enterprise network. Microsoft's current ActiveX standards are proprietary and lack all of the good features of my definition of such a network.

Further, I believe that the information industry should take a close look at Microsoft's future network architecture and ask itself the following questions:

- Will Microsoft's network products ever be interoperable with other vendors' platforms and operating systems?
- Will Microsoft's network products ever be totally secure, with multiple security policies and multiple security domains in a distributed network using different security mechanisms?
- Will Microsoft provide interoperable industry standards, like those of good standards organizations such as the Object Management Group, the W3C, the IETF, the IEEE, and others, that can provide the information industry with the truly needed standards for the ultimate enterprise network?

If the answer is no to all three questions, then let us speak to Microsoft as an industry by saying, enough is enough!

Gene Jarboe
Severna Park, Md.

FROM THE EDITOR IN CHIEF · SANDY REED

Notes from China: InfoWorld breaks ground for second test center

Product Comparisons Editor Tom Young recently spent a week in China to attend events organized around the groundbreaking for *China InfoWorld*'s second test center, in Shanghai. He also visited the existing lab in Beijing. After returning to his office in the original InfoWorld Test Center in San Mateo, Calif., Young filed this report:

"One of the most remarkable aspects is just how fast the cities seem to be growing. New buildings and signs of construction are everywhere. I was told that even in the past five years there have been marked social and economic shifts toward a more western way of doing things — with the expected growing pains. For example, as increased mechanization and economies of scale have decreased the need for manual farm labor, large numbers of people are now moving into the cities, and congestion is becoming a new problem. On the other hand, increased industrialization and rapidly growing high-technology industries are providing a large number of opportunities in the urban centers, especially Shanghai.

"Growth of the Chinese PC industry is important to members of the Chinese government and to the Ministry of Electronics Industry in particular. The existing Beijing test center and the new Shanghai test center are jointly sponsored by the Ministry of Electronics and International Data Group (*InfoWorld*'s parent company). Because the ministry is chartered with promoting Chinese computer products, this could potentially make for some interesting policy discussions regarding editorial loyalties. However, the Beijing lab is separated (physically and organizationally) into the China InfoWorld Test Laboratory (CIW) and the China Software Test Center (CSTC). The latter reports closely to the ministry and is responsible primarily for quality-assurance testing.

"The new Shanghai lab will be divided into CIW and CSTC sections as well but has the additional job of maintaining the Center of Issuance and Exhibition of Shanghai, a showcase of computer products. The test center has a staff of 11 people, an office, and a small Windows NT network but no lab space yet. The team expects to be fully operational within five to six months, and some of its immediate projects include evaluations of China-produced PCs and tests of banking machines (primarily ATMs)."

If you're interested in learning more about his visit to China, send e-mail to tom_young @infoworld.com.

Sandy Reed is editor in chief of InfoWorld. Contact her at sandy_reed@infoworld.com.

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13 YEARS AGO IN INFOWORLD

Lotus 1-2-3 rode high until Windows revolution

AUGUST 1, 1983 INFOWORLD'S reviews, always known for being stingy with praise, tried hard not to get caught up in the hype over Lotus Development Corp.'s 1-2-3 spreadsheet application. Still, our review declared: "Lotus 1-2-3 is the best spreadsheet, information management, and graphing package I have ever used. Notwithstanding all of the superlatives used to describe it, I must say it is a very good product — whatever it is."

Reviews and word of mouth — plus Lotus' $1 million mass-market advertising budget — helped build Lotus into the largest micro-

computer software company within two years, with $157 million in sales in 1984.

The killer app that accompanied millions of IBM PCs and compatibles into corporate offices proved to be a difficult act to follow. Sales of other releases, such as Lotus' Symphony, were dwarfed by the 1-2-3 juggernaut.

But, with the release of Windows 3.0, the tide toward the windowing environment took Lotus' management by surprise. Upgrades of 1-2-3 sputtered as the company tried to respond to a market shifting profoundly toward the graphical user interface and — ultimately — Microsoft Corp.'s Excel spreadsheet.

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Stratus

Confronting

ISO 9000

By Paul Karon

Chances are pretty good you haven't had to learn about ISO 9000. Chances are also good that you're perfectly happy about that. Yet ISO 9000, the international standard for overall quality business processes, has for the past several years been wielding a growing, but often controversial, influence on business and industry in the United States and worldwide.

If you're an IS manager at a large company, or one that does business with the federal government or with governments and companies in Europe and other foreign countries, you're likely to be hearing about ISO 9000 soon, if you haven't already.

And now, as quality systems proliferate and become integrated with organizational computer architectures, IS managers are being given increasingly important roles in the ISO 9000 world.

Of course, that brings up one minor question: What is this ISO 9000 stuff anyway?

For those in the never-heard-

Quality business standards are starting to take root in IS shops

of-it crowd, ISO 9000 is not the code name for a secret rocket fuel or a new vitamin pill. Instead, ISO 9000 can be thought of as the primary internationally recognized *Good Housekeeping* seal of quality business practices.

Broadly speaking, ISO 9000 is a framework for conducting business procedures in a way meant to ensure that companies conduct the highest caliber of work possible. The framework comprises the entire span of delivering a product or service: purchasing raw materials or components, contract review, quality control product inspection, design, development, handling, delivery, employee training, and customer service and support.

"In the last five years or so, a lot of people in this country have become interested in having their organizations certified to the ISO 9000," says Taz Daughtrey, manager of educational services for the software division of the American Society for Quality Control, a professional society based in Milwaukee. "And for the last couple of years, ISO 9000 has become increasingly visible in the computer industry, as well."

IS ROLE. Information systems strategists may well become a critical part of ISO 9000's adoption.

"In a highly automated business, IS managers really bear a lot of the responsibility for the success of an ISO 9000 system," says Bob Vickroy, senior auditor for ABS Quality Evaluations Inc., a Houston ISO 9000 registrar — that is, one of the companies authorized to certify companies as ISO 9000-compliant.

Still not quite sure what exactly ISO 9000 looks and feels like? Its procedures take the form of a document management system, where the documents are the records of what a company does and who is responsible at each step of its quality systems processes.

ISO 9000 lays out a general set of quality management practices and a common vocabulary to describe those practices — both internally and externally.

What ISO 9000 is not is a standard for the quality of a company's actual products or services, according to experts.

Don't be surprised if all this sounds familiar: ISO 9000 covers some of the same territory found in other well-known quality systems, such as Total Quality Management

or the software development processes that are outlined in the Capability Maturity Model, developed at Carnegie-Mellon University.

"Interest in ISO 9000 is a very important trend," says Jan Jackson, an ISO 9000 specialist with Jackson Hill Consulting, in Westford, Mass. "It's grown out of an increasing focus on quality management systems in recent years."

ORIGINS.
Everyone is in favor of quality, but with so many other quality process systems to choose from, what makes ISO 9000 special?

First, here's a quick explanation of ISO 9000 and its origins.

ISO 9000 (actually a collection of five subgroups: 9000, 9001, 9002, 9003, and 9004) comes from the International Organization for Standardization, based in Geneva — which is itself a federation of national standards bodies, such as this country's American National Standards Institute. Most of the wording in the ISO 9000 standards came from the British Standards Institute, which has been a leading force in pushing for business practice standards in the European community.

And that standardization has been taking hold. At last count, about 100,000 businesses worldwide had received ISO 9000 certification, roughly half of them in the United Kingdom. Currently, approximately 10,000 American companies have ISO 9000 registration. Though the standards were written with the intention of applying to all industries, they have a definite bias to traditional manufacturing businesses.

A company obtains ISO 9000 registration by developing and instituting a set of processes that are in compliance with the guidelines in the ISO 9000 documentation. That company is then audited by an approved ISO 9000 registrar.

Even then, it's not over. In fact, it's never over: ISO 9000 rules require outside auditors to come in every six months — perpetually — to ensure that the registered company or site is sticking to the procedures. If not, the site can lose its certification.

CUSTOMER DRIVEN.
Despite the governmental sources of the ISO standards, ISO 9000 compliance is completely voluntary. The pressure to attain ISO 9000 certification comes from customers — not from statute. What's probably most important about ISO 9000 is that many companies around the world — especially in Europe, as well as a growing number of buyers in this country — require ISO 9000 registration of the companies they purchase goods and services from.

Simply put, no ISO 9000 registration, no contract.

In the United States, for example, NASA now requires its suppliers to be ISO 9000 registered, as does the Department of Defense.

DuPont Inc. is an example of an ISO-compliant business. It buys and sells products relating to its chemical business all over the world. So it made perfect sense for the Wilmington, Del.-based company to adopt ISO, says Robert Payne, document management architect within DuPont's corporate information systems division.

"So many of our products go into other products sold in Europe that it's a business

essential that we be ISO 9000-compliant," Payne says.

Each individual DuPont plant is responsible for obtaining ISO 9000 registration; Payne's job is to help them implement the computer systems where the ISO 9000 processes reside.

Different DuPont sites had originally implemented manual ISO 9000 systems or written their own applications. DuPont found that its ISO 9000 and other procedural documentation needs could be better met through the use of PC-based client/server systems. The company used products from the software company PC Docs Inc., in Burlington, Mass., to create the final ISO 9000 system.

"The PC Docs products best met our needs," Payne says. "It was much more economical for us to buy vs. to build our ISO 9000 applications."

It wasn't unusual for a single plant site to invest $10,000 in developing a homegrown ISO 9000 solution, Payne says, as opposed to buying a PC Docs license for just a few hundred dollars.

About two years ago, Metatec Corp., a maker of CDs, decided to implement a formal quality system.

"Ultimately we chose ISO 9000 because it's an international standard, and because it's a good framework under which we can develop our own quality system," explains Alex Deak, chief information officer of the Dublin, Ohio, company. "The external audits of ISO 9000 were also important to us because we wanted the independent verification."

Metatec, a Unix-based shop with about 300 Windows-based PCs, opted to write its own ISO 9000 system in C and C++.

"We investigated several manufacturing-oriented systems, but at the time — four years ago — none met our needs for flexibility and our special processes," Deak says. "We also felt we wanted direct control to change the model as our processes changed."

FOCUS ON BUSINESS PRACTICES.
Depending on whom you ask, ISO 9000 is either a great system for quality business processes, a vaguely annoying but necessary credential, or a waste of time and money.

Now, everyone knows an issue in the business world has hit the big time not when it's written up in The Wall Street Journal, but when it makes it into Dilbert, the comic strip written by Scott Adams. When Dilbert's company ordered the implementation of ISO 9000, it was Dilbert's job to see that his colleagues carried out a collection of pointless directives supposedly mandated by the standard — such as putting ridiculous labels on every single item in the offices.

According to ISO 9000 champions, the idea that ISO 9000 promotes busywork is a fallacy.

"The thing people have to realize is that what you've got to do for ISO should support your fundamental business practices," says Bill Deibler, an ISO 9000 consultant whose company, Software Systems Quality Consulting, is based in San Jose, Calif. "If you're not addressing these things already, you've got a big problem on your hands.

"There isn't anything in ISO 9000 that talks about hanging onto every piece of paper — they just say the important documents have to be approved and then routed into some secure directory," Deibler adds.

Jane Joseph, director of quality assurance for Managistics Inc., a Rockville, Md., maker of supply chain management software, has already been through the ISO 9000 process a few times — first at her previous job at IBM and now at her current company. She has used ISO 9000 implemented well, and she has seen it implemented poorly.

"There are some companies that do make a lot of busywork and create systems with too many details that people are never going to follow and which, by the way, are not required by the standard," Joseph says.

NO QUALITY GUARANTEE.
Perhaps the most curious part of the whole ISO story is the inability even of ISO 9000 consultants themselves to say whether the quality system actually improves quality.

"After eight years working with ISO 9000, I would have great difficulty telling you that purchasing from an ISO 9000-registered company will guarantee you greater value," says Jim Lamprecht, a Bellevue, Wash., consultant and author who has written four books on

ISO 9000. "The fact is, a lot of people tell me, 'Gee, I'm purchasing from an ISO 9000 company, and they're still sending me the same bad product as before they were certified.'"

ISO 9000 should be taken as just one of many factors in deciding whether to do business with a supplier.

"If done correctly certification means they've taken care of a lot of issues that should better guarantee customer satisfaction," Lamprecht says.

Many of these same consultants say the companies that go through ISO 9000 certification see real benefits, both in terms of money savings and happier employees.

"It's almost a universal truth according to nearly all the surveys done that the vast majority of companies have saved money by putting in an ISO system," ABS Quality's Vickrey says.

According to these surveys, say ISO experts, the internal and external costs of getting the ISO 9000 run about $220,000, on average. But companies implementing ISO 9000 systems supposedly save money, too — because of increased efficiency — anywhere from $100,000 per year to as much as several hundred thousand dollars, or more.

Vickrey maintains that — Dilbert's experiences notwithstanding — employees tend to like the ISO procedures.

"It improves communication and helps everyone understand how the business runs." Vickrey says.

Consultants acknowledge the charges that ISO 9000 is just another way for them to make money — especially in light of the requirement that registration be recertified with twice-yearly inspections.

"Remember, other quality systems can disappear with the first change in management or budget," Vickrey says. "But a company is more likely to commit to an ISO 9000 system because of the regular inspections."

Paul Karon is a free-lance writer based in West Hollywood, Calif.

DOCUMENTING YOUR ISO 9000 SYSTEM

Though it's theoretically possible to create an ISO 9000-compliant business processes system with a pencil and a legal pad, the majority of ISO 9000 systems are built with word processing software, for the simple reason that this is where the documents live.

In manufacturing environments, the top systems can be part of the overall control software or the revision control software.

But document management software often works especially well for making ISO 9000-compliant procedures, according to ISO 9000 consultants.

Almost any workflow or document management application could probably be used to make an ISO 9000 system: Organizations have used Lotus Notes or HTML intranet solutions.

Here's a list of document management software vendors whose products provide most, if not all, of the document control features you need for an ISO 9000-compliant system, according to Frank Gilbane, editor of The Gilbane

Report, a document management newsletter published in Marshfield, Mass.

XSoft, the document management group of Xerox Corp., in Palo Alto, Calif. (800) 428-2995.

Documentum Inc., in Pleasanton, Calif. (888) 362-3367.

FileNet Corp., based in Costa Mesa, Calif. (800) 345-3638.

Information Dimension Inc., in Dublin, Ohio. (614) 761-8083.

Inforium, The Information Atrium Inc., in Waterloo, Ontario. (519) 885-2181.

Intergraph Corp., in Huntsville, Ala. (800) 345-4856.

Interleaf Corp., in Waltham, Mass. (800) 955-5323.

Open Text Corp., in Waterloo, Ontario. (519) 888-9910.

PC Docs Inc., in Burlington, Mass. (617) 273-3800.

Texcel Research Inc., in Cambridge, Mass. (617) 621-7004.

Workgroup Technology Corp., in Lexington, Mass. (800) 561-5751.

Xyvision Inc., in Wakefield, Mass. (617) 245-4100.

"Now that my company

is on the Internet,

will I have to explain

to management

what a Resident

Stealthed

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virus is and

why it brought down

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Content is king of costs

A survey of 85 North American businesses shows that initial content accounts for more than half of the cost of establishing a Web site

Cost elements to establish a Web site

Initial content	55%
Web site software	4%
Server	19%
Telecommunications hardware	3%
Telecommunications software	7%
Web browser	1%
Network costs	11%

SOURCE: CREATIVE NETWORKS INC.

IS SURVIVAL GUIDE · BOB LEWIS

Seeing beyond internal customer myopia keeps focus on big picture

MANAGEMENT SPEAK: *Value-added.*
TRANSLATION: *Expensive.*

Thanks to the anonymous reader who provided this.

THE COLLAPSE OF WORLD communism means we no longer get to hear political candidates refer to one another as commie pinkos, communist dupes, or the ever-popular Marxists. Now we get to hear about the character issue; the term liberal is bandied about as an epithet, anyone we dislike becomes a Nazi, and everyone involved seems to be searching for issues worthy of an attack on their opponents.

I miss the old days.

One of the principal differences between Marxism and capitalism is the theory of value. Karl Marx proposed the labor theory of value, whereas capitalism promotes the market theory of value.

The labor theory of value, which is typical of Marxist economics, has a curiously ethical flavor to it. Value, Marx says, comes from the effort needed to transform raw materials into finished product — that is, it's the workers who create value.

Capitalism, pragmatic as always, says that the market, through the dynamics of supply and demand, establishes value. The market, of course, is nothing more or less than the aggregate behavior of all actual and possible customers. Customers define value in a capitalist economic system.

Customers define value, which irritates movie critics (who usually sneer at anything lacking subtitles or including an explosion and a car chase), computer-phobes (who complain about feature bloat, claiming nobody uses program options I use every other day), and software engineers (who deride those who care more about features than internal architecture).

The idea that customers — real paying customers, not "internal customers" — define value is one of the three great rules of management. (The other two? Form follows function and align everyone to a common purpose.)

I am not a big fan of the internal customer concept. It strikes me as a metaphor that has been extended beyond its usefulness.

When you're redesigning a process, you need to look at who sends work in and who receives the work you send out. Why? You define the specifications for the work that comes to you, and the recipient of the work you create defines the specifications you use to define your product. In that sense, whoever receives the work you create is your customer, whether it's an employee in your company, a department in your company, or an external customer.

So far, so good. Internal customer is

useful shorthand that refers to whoever creates the specifications. Unfortunately, nobody can ever seem to limit the applications of a metaphor, so in short order, people start to believe that internal customers are always right, just like external customers. Some people in accounts-payable departments even believe vendors are their customers, because vendors receive the work they create.

Internal customers lack the defining characteristic of real customers. They don't pay you. That means they don't define value, and a transaction with an internal customer does not give you the wherewithal (money) to provide the service they ask for. And that, in turn, means they're not always right.

The internal customer metaphor also violates the third great rule of management: Align everyone to a common purpose. It takes companies to the opposite extreme, inducing severe myopia.

When employees believe in internal customers, they look no further than the needs of the next person in line. Only a few employees worry about the needs of real paying customers.

Here's what I recommend as an alternative: Everyone in the organization should understand their role in providing value to real paying customers — in other words, the big picture.

If you're in accounts payable, you're trying to minimize overhead while maximizing cash flow, thereby helping sell products and services at an affordable price. Human resources? Help managers develop a motivated, skilled workforce.

How does the IS department provide value to real, paying customers? Traditionally, we do so by helping everyone else in the company be more effective in their roles. That, in turn, helps the company increase the value it can deliver.

The world, however, has changed. Now we have a more direct role to play. Have you started to play that role?

Bob Lewis is a consultant with Perot Systems Corp. Send him e-mail at robert.lewis@ps.net, or join his forum on InfoWorld Electric at http://www.infoworld.com.

Calendar

"Now that my

company is on

the Internet,

will a fancy

port scanner

algorithm make

mincemeat

of my

firewall?"

The Internet lets your company open its doors to millions of potential customers, partners and contributors and, unfortunately, some potentially dangerous hackers, crackers and online troublemakers.

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Data warehouse initiative helps Sears weather competition

■ Terabyte-size sales database helps eliminate accounting problems, inconsistencies, and redundant data

By Ilan Greenberg

IN THE LONG-AGO DAYS before the convenience store and shopping mall, Western settlers relied on a thick, illustrated catalog from Sears, Roebuck and Co. to purchase everything from foodstuffs to rocking chairs. The catalog is part of the past, but Sears is still around, battling K-Mart and Wal-Mart and all the other fearsome competitors that have sprung up in shopping malls.

But the company with a storied past was finding this more recent chapter of its history quite rocky. In 1993, Sears, based in Hoffman Estates, Ill., was experiencing a general financial malaise. At the same time, consulting firm Price Waterhouse, hired to evaluate Sears' data warehousing strategy, found problems with inconsistent reporting, inconsistent warehousing, and storage of redundant data, along with problems computing gross margins. The technological problems were consistent with the company's across-the-board problem of staying competitive.

CASE STUDY

CEO Arthur Martinez, hired during that time to turn the company around, quickly hired a CIO from Price Waterhouse to use the company's successful methodology to manage legacy systems and install a massive central repository for its point of sales systems. Within a year Sears was ready to implement a new system.

"Our [application] mission is to be the single most authoritative source for sales information. Whether [users] access it directly or through summary tables, they're coming at it through the same data repository," says Doug Klein, who joined Sears as senior systems manager during the period of the data warehouse search.

TO THE RESCUE. After evaluating most of the major data warehousing hardware and database vendors, the company quickly whittled the list down to a single name.

"We launched a search and came up with NCR [Corp.]. The basic reason for the choice is actually pretty simple: When you're talking about a terabyte of data, there wasn't any other player who could do the job. IBM was okay for maybe 200GB, but back then [IBM] was just getting started with this kind of scale," Klein says.

NCR, which was recently spun out from AT&T and is based in Dayton, Ohio, dispatched its Worldwide Services consulting arm to put together a proposal for Sears. This division brought to the task such strengths as a global staff of 20,000 and years of experience with customers requiring huge storage and retrieval systems.

"We have all these legacy systems: a replenishment inventory system, mainframes running Cobol and Assembler. And we were real concerned with how we can refresh information, recover information. We had backups, and we had a plan. But it would take 48 hours

MAKE NO SMALL PLANS is a Chicago credo, and local Sears and its senior systems manager Doug Klein made good on the tradition with a 1.7-terabyte storage system from NCR.

just to load the data from scratch. If you take a disaster hit you need a new machine, and you need to get that machine from the factory floor, and that would take a week or two," Klein says.

TWO-AND-A-HALF-PERCENT SOLUTION.

NCR put together a system for Sears that can accommodate its storage and disaster recovery requirements at a cost the bean-counter retailer could stomach.

"Basically the data warehousing [component] should cost between 1 [percent] and 5 percent of your IS budget. If you're below that figure you're not serious about data warehouse; if it's above, you're paying more than you should. We are within those parameters, which makes me pretty confident about our deal," Klein says.

At the center of the implementation is an NCR 3600, a massive server running C and NCR's version of Unix, called TOS, and capable of 1.7 terabytes of data storage. For a back-end database, Sears went with Teradata, a database vendor acquired by NCR in 1992 that specializes in processing large repositories.

The decision, however, to purchase the Teradata system was not predicated on its ownership by NCR. The Worldwide Services Division gets paid the same fee regardless of the software

and hardware platforms it recommends, and Teradata appealed to Sears on its own merits.

"If you look at how you parse and petition the data in the system, it's basically a self-monitoring management database. That means we use about a half of a full-time staffer for support of the Teradata [database]," Klein says. Discovering the right client applications for the system's 2,500 users was a less tidy affair.

"We went out looking for an off-the-shelf application, but all of them have too much overhead when generating SQL when you're getting at the size of database we're using," Klein says.

Disappointed with commercial offerings, Klein instead chose to build Sears' software in-house with PowerBuilder as the application development tool, as well as a package called Top End, a transaction manager from NCR. Called the Strategic Performance Reporting System, the application ports to a Lotus 1-2-3 spreadsheet front end, and by next year Klein expects his sales data warehouse to tie into the company's general ledger financial system.

Having an easy-to-use and accessible application on the client was crucial to the system's success because of the breadth of users expected to query for sales numbers on a daily basis. Sears is no small operation, and users booting up will include buyers, line level replenishers, accountants, advertisers, marketers, and senior level executives.

The new system, which uses PC clients running a combination of OS/2 and Windows 3.1, provides 121 weeks' worth of daily sales history for each item by location. Sears keeps weekly information for the inventory portion of the database.

KNOWLEDGE TRANSFER. Even after the project was near completion, NCR's Worldwide Services wasn't going anywhere. Sears didn't let it. In fact, written in the company's contract was the retention of three to four full-time NCR staff members who led the initial data warehouse charge for Sears. By keeping NCR consultants until the bitter end, Sears took advantage of one of the purported hallmarks of Worldwide Services: real knowledge transfer.

"[The NCR] people we kept are specifically value-added in the areas of performance enhancement, data modeling, and system design," Klein says.

While it may appear coincidental that the revamped data warehousing system is nearing completion at the same time that Sears is re-emerging as an industry powerhouse, such a view ignores that information is at the core of retailing in 90's America. And at Sears, the revamped data warehouse provides that core.

NCR SPREADS ITS SERVICES WORLDWIDE

NCR Corp.'s recent corporate history needs more like a government white paper on the American family than a company report. Acquired by AT&T in 1991 and to be spun off by the end of 1996 when AT&T splits itself into three parts, NCR's Worldwide Services Division seems to have thrived amid the chaos.

The division provides business and technology services to a broad array of industries and, with 20,000 employees in 130 countries, can usually offer consultants with specific vertical-industry experience, such as the retail industry in its recent project with Sears, Roebuck and Co.

"We came in and won the contract to implement the data warehouse project, and in doing that we were performing a service that we would call a business discovery, understanding the pains they have in their business, and what IT solutions can resolve those problems. We came in before they made their choice in vendors and showed our expertise in retail," says Mike Watzke, a senior consultant at NCR Worldwide Services, in Chicago. Although they lament NCR's recent rocky history, industry analysts generally concur with Watzke.

"I think in consideration of all that's going around them, [Worldwide Services] is doing pretty well," says Tim Bourgeois, an analyst with International Data Corp., in Framingham, Mass. "They're focused on selected industries, and they don't spread themselves too thin. They're going to focus on, say, data warehousing, where they have a lot of expertise and experience. In terms of being tied to their hardware they seem to be fairly objective. All in all, they're growing and demonstrating more focus than they have in the past."

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Catching up with the Joneses and 'requirement' creep

ONE OF THE PEOPLE I didn't include in last week's discussion of resources for improving your software development process is Capers Jones, chairman of Software Productivity Research Inc. (SPR), in Burlington, Mass.

Jones' main focus and expertise is keeping a handle on the size and complexity of development projects — one of the key areas of weakness I've noted in examining Raytheon Inc.'s award-winning process improvement efforts over the past month.

I've just read some of Jones' recent work, which convinced me he's probably better than anyone I've run into at clarifying the problems that bedevil application development teams.

Jones on the Raytheon bugaboo

With Raytheon, unplanned growth of the size and complexity of a development project is particularly thorny because the growth tends to occur not in the total size of the code, but rather in the number of functions required to complete the task. Raytheon has made some progress in this area. But it faces going through the learning curve again as it shifts from estimating project scope via functional analysis to tasks appropriate for object-oriented tools and development methodologies.

What does Jones have to say about all this? He compares developing the requirements for business applications to taking a hike in a fog. At first you can only see a few feet down the path, but as you hike further, more of the terrain ahead becomes clear.

The problem, of course, is that the business process a development project is automating is generally not well-understood before there is a concerted effort to capture and rationalize it in software.

Raytheon's solution has been to build in some assumptions about growth in functions. Moreover, its software process monitors not just code size, but also number of functions, to see just how much creep in scope has taken place. Finally, Raytheon manages the risk (or inevitability) of functional "requirement creep" to clearly identify and deal with the impact it has on costs and schedules.

Among the approaches Jones recommends to get a grip on functional requirement creep is Joint Application Design (JAD). Essentially, JAD involves locking a team of end-users and application developers in a room with a skilled facilitator. You don't let them out until they produce a requirement specification (and in some flavors, a working prototype) that everyone agrees upon.

In the Cambridge Technology Partners version of this approach (Cambridge Technology Partners is a service organization that helps businesses with client/server application development), the team commits to demonstrating the working prototype to someone in upper management the moment they emerge from the locked room. As a result, a lot gets done.

Jones estimates that this consensus approach reduces requirement creep by half compared to adversarial approaches, and kicks in another 10 percent to 25 percent improvement for prototyping.

Leveraging Jones

Jones' SPR offers tools to help scope and track all aspects of development projects and can be reached at (617) 273-0140.

SPR also teaches a number of courses to help software managers get a handle on their processes. Finally, Jones himself has agreed to visit my Best of Software Development forum on http://www.infoworld.com this week if you care to ask him a few questions directly.

Kevin Strehlo is director of product marketing at Continuus Software Corp., in Irvine, Calif., and a former executive editor at InfoWorld. Write to him at kstrehlo@mcimail.com.

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Internet firewalls

It's between you and them

Security experts and IS administrators agree: A firewall is the best way to protect your internal network. But with every vendor implementing a different technology, which one is the safest?

Much to the bemusement of longtime chat-room denizens and **alt.peeves** aficionados, the once homespun Internet — previously populated mostly by professional academics and college freshmen — has emerged as an indispensable business tool. With access to the Internet, you and your co-workers can use the World Wide Web to locate product data sheets and other materials to help you plan buying decisions. You can use the Internet's Usenet bulletin boards to discuss important technologies with remote colleagues and send e-mail to remote offices and strategic partners via virtual private LANs.

With an Internet connection, you can publicize your company wares and even take product orders over a direct, interactive channel. But like all good things, access to the Internet comes at a price. A worldwide network designed from its core to be open, the Internet invites security abuse. Without a plan in place and the technology and people-power to back it up, you could unwittingly hand the keys to your corporate resources to hackers who have more in mind than sending messages forged in your name to rec.tv.mission-impossible.

The logical rejoinder to the security threats posed by unscrupulous Internet citizens is a firewall.

Of the few standout firewall vendors, we compared products from three: CheckPoint Firewall-1 2.0, from CheckPoint Software Technologies Inc.; CyberGuard Firewall 2.1.2, from Harris Computer Systems Corp.; and Gauntlet Internet Firewall 3.1, from Trusted Information Systems Inc.

Unfortunately, we didn't have the time or resources to look at more than three products, so we left out Secure Computing Corp.'s BorderWare Firewall Server and Raptor Systems Inc.'s Eagle Firewall. We are working on a Product Comparison Update that includes these two products, so watch for it in the near future. We did , however, take a brief look at the NT version of Eagle. We chose it because Raptor is the only major firewall vendor with a commercially available Windows NT product.

CALL AND RESPONSE. Although the term firewall, like most security jargon, echoes with the drama of a Robert Ludlum novel, it implies a simple concept: keeping outsiders away from your private internal networks. A firewall is not a precise implementation of a specific technology — quite the opposite. It's an umbrella term, encompassing any

number of security techniques designed to keep the outside world from getting into your Internet-aware network and wreaking havoc.

Nevertheless, most firewalls, pre-bundled or home-built, isolate your internal network in one or two ways. One way is denying the use of specified unsafe services on your front-line Internet server (your bastion host): This is known as an application gateway, or proxy server. The second way, packet filtering, disallows traffic from passing to your network from anywhere other than predefined, trusted sites.

GOOD FENCES MAKE GOOD NEIGHBORS.
Packet filtering, a special kind of routing, has historically been considered the most basic security. Standard routers use their intelligence to determine where a packet should be sent, but packet filters extend this intelligence, based on end-user-defined security rules, to determine whether a packet should be sent onto your network in the first place. A typical packet filter can check IP address and service information: that is, it determines if traffic is coming from a trusted location and whether requests are for allowed services. Thanks to their open-systems-mindedness, their widespread use, and the Internet community's broad knowledge of their loopholes, many services, including Telnet and FTP (File Transfer Protocol), are unsafe virtually by definition. A packet filter will let you set rules that block such services.

Unlike some other security mechanisms, packet filtering is blissfully transparent to your users. Also to its credit, inexpensive packet-filtering routers can conveniently provide a single point of entry and exit to and from your network and can effectively disable services that have been inadvertently enabled on one or more of your network's machines. Additionally, packet-filtering capabilities are widely available in both commercial and freeware routing products, making them a convenient approach.

Because of the sheer numbers of packets legitimately passed to and from the Internet, it's easy to forget to deny some packets — even trivial ones. Therefore, packet filtering, which allows direct contact between the Internet and your network, is not considered safe enough.

A proxy server will isolate your system more fully by creating a physical barrier between the inside and outside (without compromising user transparency). In a proxy configuration, users' clients communicate directly with a proxy server for a specific set of protocols, such as FTP, HTTP, and Telnet. The proxy, which runs on a dual-homed host (a host with two network connections), decides if client requests should be passed on or ignored. It then serves as an intermediary between client and host for valid requests.

But proxies aren't perfect. Application proxies, for example, don't address all the potential security weaknesses of every possible protocol (for example, the highly extensible HTTP), and they require that you have a proxy for every protocol that you'll want to support. Gauntlet, the winner of our comparison, is an application-gateway firewall.

Our second-place contender, CheckPoint, is neither a traditional packet filter or application gateway. CheckPoint Software calls the technology it uses Stateful Multilayer Inspection. To accomplish the standard firewall functions of hiding internal IP addresses, CheckPoint performs a unique form of address translation. In other words, its scripting language tracks and examines packets up through the application layer and extracts only the data that is relevant to security. This eliminates the need to run a separate proxy application for every service.

ETERNAL VIGILANCE.
Despite all the press that firewalls are receiving, remember: If your organization is connected to the Internet, maintaining the secrecy of your internal networks and safeguarding the integrity of your corporate data doesn't begin and end with the installation of a single software or hardware package. It begins with planning rational and effective security policies and procedures, both human and electronic. It is, after all, these business rules that you'll refer to when programming your firewall.

Even after your firewall is in place, your security responsibilities don't ever really end. Firewalls promise many things, except minimal care and feeding; they are far from a set-and-forget technology.

Your firewall not only blocks potentially dangerous traffic coming from the great network cloud that is the Internet, but it also traces inbound and outbound requests. Yet no black box in the world can save you from unenforced policy or infrequent system maintenance.

You'll need to check and administer any firewall's logging system regularly through time, respond to alerts intelligently, and spot anomalous traffic patterns; the latter is a challenge even for experts.

Obviously, security is the reason firewalls exist, so our tests were designed with that foremost in our minds. For example, we cared less about a flashy user interface and more about how effectively a product's administration tools let us implement a secure environment based on our security policies. Our goal was to stretch a product to its security limits.

79 Backtalk: We asked two security experts to comment on the use of scanners as an effective way to test for network security vulnerability. Here's what they had to say.

78 Secure horizons: When it comes to protecting your network, only security matters.

Contents

80 Eaglese: Raptor Systems Inc. is the first vendor to market with a Windows NT version of its firewall. We found it secure and easy to use.

Results at a glance

different technologies are used to build firewalls: application gateways (also known as proxy servers) and packet filters. Application gateways are considered more secure because they isolate your network more completely. There are, however, some problems with application gateways. Specifically, you must have a proxy for every protocol (such as HTTP and FTP [File Transfer Protocol]) you want to support. Our winner uses the application gateway paradigm.

Gauntlet Internet Firewall 3.1's no-nonsense design reflects its roots: It was created by security experts who did not compromise security for a colorful GUI. Not only is Gauntlet secure, but it comes with impressive support policies, has a professional technical support staff, and — as if all that weren't enough — is the least expensive product we tested. To be sure, Gauntlet is not without its faults. It touts a Web-based GUI, but when we tried to use it, most of the useful pages were "under construction." Furthermore, setting up restrictive rules (such as not allowing your users to see a certain Web site) requires quite a

The Score

6.5
Gauntlet Internet Firewall 3.1

6.3
CheckPoint Firewall-1 2.0

4.6
CyberGuard Firewall 2.1.2

lot of text-file editing. Gauntlet also suffered in the services category because, surprisingly, it doesn't support the Socks proxy server. In the scheme of things, these complaints are minor.

CheckPoint Firewall-1 2.0, from CheckPoint Software Technologies Inc., came in second because we found a small but important hole in its armor. During the system boot, it is completely open to attack — although only for a few seconds. We were, however, very impressed by its powerful GUI — the best administration tool we used in the comparison. CheckPoint's innovative design, which is modeled after packet filtering, doesn't require you to wait for a proxy server to be developed before you can pro-

vide the service to your users. It is transparent to your users and has detailed logging and alerting, which you can track even the most harmless activities. Finally, it comes with thorough documentation and excellent support policies, and it costs only $3,900 more than first-place Gauntlet.

We were disappointed by Harris Computer Systems Corp.'s **CyberGuard Firewall 2.1.2.** Mediocre scores in several categories caused its final score to be almost two full points behind the winner's. CyberGuard is both a packet filter and an application gateway; unfortunately, neither is very well implemented. The best thing we can say about it is that its GUI is easy to use.

Ironically, its GUI is what gave us so many problems. The interface behaved so strangely so often that we were left feeling uneasy about the stability of the entire system. We were also underwhelmed by the number of services it supports. Of the three products, CyberGuard has the least support for access to the Internet from an unregistered or hidden domain. As if this weren't enough, it costs twice as much as Gauntlet.

INTERNET
FIREWALLS

Report Card

Internet firewalls

	Weighting	CheckPoint Firewall-1 2.0	CyberGuard Firewall 2.1.2	Gauntlet Internet Firewall 3.1
		CheckPoint Software Technologies Inc. Redwood City, Calif. (800) 429-4391, (415) 562-0400 http://www.checkpoint.com	Harris Computer Systems Corp Ft. Lauderdale, Fla. (800) 666-4544 http://www.hcsc.com	Trusted Information Systems Inc. (TIS) Rockville, Md. (888) 347-3925 http://www.tis.com
Performance				
Installation and initial configuration	10%	△ Satisfactory ⊖ 0.4 □ 75 Without question, CheckPoint is the most difficult of the three products to install; to do so successfully, you need prior experience working with Unix.	△ Satisfactory ⊖ 0.4 □ 75 It's fairly easy to install and configure CyberGuard. The physical presentation of the system is impressive: a 17-inch monitor, an X-terminal, and an enormous piece of hardware come as part of the package.	△ Good ⊖ 0.6 □ 75 Gauntlet came with one day of consulting services, to be used specifically for installation and configuration. Needless to say, installation was a snap.
Administration	15%	△ Very Good ⊖ 1.2 □ 75 CheckPoint's GUI is the most powerful of the bunch; unfortunately, it takes some getting used to. It has the most advanced configuration options, which made administration very easy.	△ Good ⊖ 0.9 □ 75 Although they appeared to cause no security problems, a few minor bugs in the user interface left us feeling uneasy. The fact that its interface is the easiest to use of the three we compared spared it from receiving a lower score.	△ Satisfactory ⊖ 0.6 □ 75 Gauntlet comes with both text-based menus and a Web-based GUI; unfortunately, most of the useful Web pages were "under construction" and not usable. As a result, Gauntlet's GUI was the least memorable of the three.
Security	30%	△ Satisfactory ⊖ 1.2 □ 78 Surprising as it is, CheckPoint is completely wide open to attack for a few seconds during the system boot. Ironically, its fundamental security design is superior to that of the other products.	△ Good ⊖ 1.8 □ 78 It requires a fair amount of programming to set up CyberGuard's monitoring and alert notifications — something done easily with both Gauntlet and CheckPoint. In its favor are its strong security and detailed logging capabilities, and it didn't have the security problems CheckPoint had.	△ Very Good ⊖ 2.4 □ 78 Without question, Gauntlet is the most secure of the three systems. Unlike the others, it allows no direct access to a secure network and supports a slew of authentication schemes.
Services	15%	△ Excellent ⊖ 1.5 □ 78 CheckPoint is the only product that uses Stateful Multilayer Inspection technology. This innovative design allows it to support all services, such as HTTP and FTP (File Transfer Protocol) — even on an unregistered network.	△ Satisfactory ⊖ 0.6 □ 78 CyberGuard does support basic services such as e-mail, Telnet, and rlogin, although, of the three systems, CyberGuard has the least support for access to the Internet from an unregistered domain. Unlike Gauntlet, however, it does support a Socks 4.2 proxy server.	△ Good ⊖ 0.9 □ 80 Gauntlet uses proxies to talk to the outside world. Its services are stable, effective, and fast. However, Gauntlet does not support the Socks proxy server, which is why it didn't get a higher score.
Support and price				
Documentation	10%	△ Very Good ⊖ 0.8 CheckPoint's documentation was the most complete of the three products we tested. It offered us some clear examples of how to set up the system for a variety of configurations.	△ Poor ⊖ 0.1 CyberGuard's documentation is best taken lightly. In general, it may point you in the right direction, but it will never get you all the way there. In several instances, it did not cover the topic we needed help with (such as configuring the HTTP proxy server) in any way other than the most obvious case.	△ Satisfactory ⊖ 0.4 Gauntlet's documentation reads like a Unix manual. Although this is great for Unix types who love to read and write manual pages as a form of entertainment, it's bound to confuse anyone looking for simple directions.
Technical support	10%	△ Satisfactory ⊖ 0.4 We called the technical support group three times; each time it took at least 2 hours for someone to call us back. However, once we were able to speak with someone, all of our questions were answered correctly and thoroughly.	△ Satisfactory ⊖ 0.4 Two of our three calls to Harris' technical support staff were answered immediately; the third required waiting for a call back. Unlike with CheckPoint, however, this call was returned in only 45 minutes. All of our questions were answered correctly, although we sensed frustration on the part of the technician when some basic questions were asked.	△ Very Good ⊖ 0.8 We made three calls to the technical support group. Each time we got through to technicians immediately, and even our more mundane questions were handled courteously and professionally.
Support policies	5%	△ Excellent ⊖ 0.5 You couldn't ask for better support policies. The warranty period is 90 days; there is a 30-day money-back guarantee, an 800 number, and support via a private BBS, the Internet, and fax.	△ Satisfactory ⊖ 0.2 Because CyberGuard is sold by resellers and OEMs, the support policy may vary depending on who you buy from. At a minimum, a 90-day warranty period is offered, as well as support via the Internet, a private BBS, and fax.	△ Very Good ⊖ 0.4 TIS offers 30 days of free support and a 30-day money-back guarantee. There is also an 800 number and support via the Internet, a private BBS, and fax.
Price	5%	△ Good ⊖ 0.6 CheckPoint's enterprise version includes support for an unlimited number of nodes. It costs $18,900.	△ Poor ⊖ 0.1 We tested the high-performance version of CyberGuard, which has an 88110 RISC microprocessor. Its list price is $31,995.	△ Very Good ⊖ 0.4 Gauntlet costs $15,000 and comes with one day of consulting services.[1]
Final score		**6.3**	**4.6**	**6.5**

1. TIS' prices have changed since we scored these products. (See Product Overview, page 74.)

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INTERNET FIREWALLS

Product overview

CheckPoint Firewall-1 2.0

The technology used by CheckPoint Software Technologies Inc.'s Check-Point Firewall-1 2.0 is called Stateful Multilayer Inspection; fundamentally, it works like a packet-filtering firewall, albeit a sophisticated, powerful one. Unlike CyberGuard and Gauntlet, CheckPoint does not implement proxies in the traditional sense by feeding packets to a proxy. Instead, its scripting language tracks and examines packets up to the application layer and extracts only the data defined as relevant to security. This eliminates the need to run a separate proxy application for each service.

CheckPoint operates as a server or gateway running on an Intel Corp. x86 or Sun Microsystems Computer Corp. Sparc workstation using SunOS 4.1.3 or Solaris 2.3 and 2.4. It requires 10MB of disk space and 16MB of RAM.

According to International Data Corp., CheckPoint is the clear leader in the Internet firewall market, with 4,000 commercial firewalls shipped in 1995 and 40 percent of the total market. Its flagship product, CheckPoint Firewall-1, was released in mid-1994; it is a software-based product and requires a RISC microprocessor. Another CheckPoint product is SecuRemote. It enables mobile and remote users of Windows 95 to connect to their base networks via dial-up Internet connections.

CyberGuard Firewall 2.1.2

Harris Computer Systems Corp.'s solution, CyberGuard Firewall 2.1.2, can function as an application gateway or a packet filter. You can also implement a combination of the two: For example, you can set up the packet filter to let your users out and the proxy server to control who's coming in.

The server can proxy the following

CheckPoint's graphical user interface is the central location for administration.

services: FTP (File Transfer Protocol), Telnet, rlogin, HTTP, SMTP, Gopher, Network News Transfer Protocol, and Real Audio.

CyberGuard is a software and hardware solution. There is a GUI for setup, configuration, monitoring, and reporting. The hardware consists of a keyboard, a monitor, and a huge box that includes 32MB of local memory, a 1GB hard disk, and a RISC microprocessor.

Founded in 1967, Harris is divided into two groups: Trusted Systems Division and Real-Time Systems Division (RSD). In May, Harris announced the sale of RSD to Concurrent Computer Corp. At the completion of the sale,

Although the GUI is nice, many of the helpful features are not usable in this version of Gauntlet.

Harris is expected to change its name to CyberGuard Corp. and to focus solely on the development and marketing of CyberGuard and other network security products.

Gauntlet Internet Firewall 3.1

Gauntlet Internet Firewall 3.1, from Trusted Information Systems Inc. (TIS), is a commercial product that was built using TIS' Firewall Toolkit. The Firewall Toolkit is a set of programs and configuration practices designed to assist in the building of a network firewall; it is freely available via the Internet and has been used to build a number of other commercially available Internet firewalls.

Gauntlet is an application-gateway firewall. Gauntlet's no-nonsense architecture reflects the fact that it was designed by security experts. The application software was created to be as small as possible, because the less code there is, the better the chances are that the software will be bug-free. Also, when using the product's Crystal Box, any TIS customer can examine the source code and algorithms that make up the Gauntlet firewall. Because virtually all security breaches are caused by someone compromising a user account, Gauntlet has only one account (it's for the firewall manager).

Gauntlet can proxy the following services: Telnet, rlogin, FTP, SMTP, Gopher, POP3, HTTP, and X Windows System.

Nearly four months ago, when we received Gauntlet, it came with a free day of consulting services; this service was to be used specifically for the installation and configuration of the system. The total cost was $15,000. Since then, TIS has lowered the price of the system to $11,500 and made consulting services an option for $2,500. We scored the installation and initial configuration and price categories based on TIS' original bundle because that is the package we received.

TIS is one of the few firewall companies that was in the security business prior to introducing a firewall product. The company was founded in 1983 primarily to do security work for the U.S. government.

Glossary

Address translation: A feature of some Internet firewalls that hides internal IP addresses from the outside world.

Authentication: The process a firewall goes through to determine the identity of a user who is trying to access a trusted system.

Bastion host: A system installed on a network that is hardened to resist attack. Usually a component of firewalls, a bastion host is running some form of general-purpose operating system rather than a ROM-based or firmware operating system.

Domain Name System (DNS): An infrastructure protocol that translates human-readable machine and site names, such as netpart.com, into numeric addresses so network programs can send messages to those machines and sites. It is also involved in e-mail routing.

Dual-homed host: A general-purpose computer system that has at least two network interfaces, each of which is connected to a different network. In firewall configurations, a dual-homed gateway typically tries to block or filter some or all of the traffic trying to pass between secure and unsecure networks.

Internet Scanner: A network scanner, from Internet Security Systems Inc., used by security and network administrators to check your network for security holes.

Logging: The process of storing information about events that occur on the firewall or network.

Log retention: The amount of time audit logs are retained and maintained.

Log processing: How audit logs process or summarize data or search for key events.

Policy: A set of rules defined by your organization that governs acceptable computing-resource uses, security practices, and operational procedures.

Packet filtering: The action a device takes to selectively control the flow of data to and from a network. To accomplish packet filtering, you define a set of rules that specifies what types of packets are to be allowed in and what types are to be blocked. Packet filtering may occur in a router, in a bridge, or on an individual host. It is sometimes known as screening.

Proxy server: Typical proxies accept a connection from a user, make a decision as to whether the user or client IP address is permitted to use the proxy, then complete a connection on behalf of the user to a remote destination. Most firewalls have a proxy for a set of protocols, such as FTP (File Transfer Protocol), HTTP, and Telnet.

Security Administrator Tool for Analyzing Networks (Satan): The first of the network scanners. It is a tool that checks your network for security holes. Critics of the device say Satan can easily be used by hackers to probe for site weaknesses through which they can attack.

SMTP (Simple Mail Transfer Protocol): A standard Internet communications protocol used to transfer e-mail. Most Internet firewalls include a proxy that supports it.

TCP (Transmission Control Protocol): Part of the fundamental protocol of Internet TCP/IP. TCP is a transport-layer, connection-oriented, end-to-end protocol. It provides reliable, sequenced, and unduplicated delivery of bytes to a remote or local user. TCP provides trustworthy byte-stream communication between pairs of processes in hosts that are attached to interconnected networks.

Installation and initial configuration

CheckPoint Firewall-1 2.0

SATISFACTORY

Like CyberGuard's, CheckPoint's default configuration lets nothing in or out. The initial configuration of the Ethernet interfaces is more difficult than with the other products we tested.

CheckPoint is more cryptic than CyberGuard or Gauntlet. In order to configure it for your network, you either need prior experience configuring a Sun workstation with two network cards or you need a Unix aficionado with a lot of free time. After you've set the IP addresses in the host files and configured the default route, you are ready to reboot and set up the system to do what it's designed to do: let traffic in and out safely and securely.

We ran Internet Security Systems Inc's Internet Scanner against the default installation, and no known security vulnerabilities were reported.

CyberGuard Firewall 2.1.2

SATISFACTORY

CyberGuard installation is straightforward. Unlike Gauntlet's, though, its default configuration is not customized for a particular environment.

Of the three firewalls, CyberGuard has the best physical presentation. The package comes with a Tektronix X-terminal and a 17-inch monitor for use as a man-

Adding and editing rules is easy and intuitive.

agement station. The firewall unit itself is built like a tank (except for the plastic front-door cover), has good casters for easy rolling, and is guaranteed to make your managers happy because you bought something so big.

The installation and configuration processes for CyberGuard and CheckPoint are very similar (the primary difference is the ease with which CyberGuard's Ethernet interfaces are configured). You just power the system on and wait. The X-terminal eventually prompts you for a log-in and a password. After entering those, it asks you for your internal and external IP addresses, then it reboots. After it finished rebooting, we ran Internet Scanner against it and, no security holes were reported.

Gauntlet Internet Firewall 3.1

GOOD

Gauntlet stood out from the rest because the system came with a day of consulting services; the consultant installed and configured the firewall for our network. The installation process is so well-designed that it even provided a way for us to back up the system before we put it into production.

The Gauntlet operating system is a patched version of BSDI Unix. The patches and the kernel compilation happened during the install performed by the consultant. After she left, we were left with a system that was ready for use on our network. We configured our browser's proxy server and port and were able to surf away.

We ran Internet Scanner against the default configuration. It reported that Gauntlet had no known security holes. During this scan, Gauntlet reported a possible security problem; it was the only firewall to detect Internet Scanner without needing more configuration.

Administration

CheckPoint Firewall-1 2.0

VERY GOOD

Although CheckPoint's interface was not as easy to use as CyberGuard's, it was by far the most powerful (and useful) administration tool of the products in this comparison. It offers advanced user, network, and alerting configuration options that the other systems do not

Of the three products, CheckPoint has the most capable and efficient interface and goes the furthest toward easing the life of the administrator who is trying to secure the network. Although CheckPoint's interface is not as easy to use as CyberGuard's, it is more stable.

CheckPoint is mainly configured and administered from the graphical user-interface program. From there you can also configure filtering rules, users, and protected systems. You can't, however, configure the much-hailed address translation via the graphical interface; you must use a text-based menu program. We hope that by the next release CheckPoint will make this a graphical interface, because the menu program is already well-organized.

CheckPoint's system has the most advanced configuration options. We could allow or disallow users at different times, as well as traffic to and from systems. It is easy to add or remove packet-filtering rules via the main interface. The notification, logging, and alerting systems were the most exten-

sive of the three products; they allowed us to pop up windows with alerts, send SNMP traps or e-mail messages, and run a script to launch a program that would, for example, page someone. As if all this weren't enough, unlike with CyberGuard, configuration information was stored in databases, keeping the text-file editing to a minimum.

CyberGuard Firewall 2.1.2

GOOD

CyberGuard's user interface is the most intuitive and easy to use of all three products; unfortunately, to configure some services (such as Sendmail) requires text-file editing. Nonetheless, its intuitive user interface earned it a higher score than Gauntlet.

All three of the firewalls we tested had some sort of graphical configuration utility, but none could be completely configured with its snazzy interface. We didn't really mind the lack of a complete GUI in Gauntlet and CheckPoint because each clearly details which commands are available through the GUI and which are not. With CyberGuard, on the other hand, it is completely unclear which should be used and when.

We found a bug in the split name-service window that added two spaces before the IP address of the privileged host. This bug occurs every time you restart the system and keep the name services from running. To bypass this problem, simply delete the two spaces and tell the system to use the new con-

figuration. Although they didn't appear to create security problems, this and some other quirks left us worried about the stability of the system.

Gauntlet Internet Firewall 3.1

SATISFACTORY

Gauntlet touts a graphical Web-based user interface. Unfortunately, most of the pages are unusable. Because of our frustration with the GUI, combined with the fact that to set up rules restricting your end-users requires quite a lot of text-file editing, Gauntlet did not receive as high a score as CheckPoint and

Sendmail is configurable via the World Wide Web.

CyberGuard.

Gauntlet uses a combination of text and graphical interfaces to let you configure the key components of the firewall. You will, however, find yourself editing tables and other important files if you want rules more restrictive than those initially installed on the system (such as not allowing your users to view a certain Web site).

What began as excitement about Gauntlet's Web-based GUI ended in disappointment when we realized that most of the useful pages were "under

construction." Fortunately, the text files that the graphical and text-based interfaces edit were clearly labeled to inform us that these files were compiled by the Gauntlet database and that we should not edit them.

The files that the interfaces edit are the standard Unix configuration files. After you change the configuration of the system, the Gauntlet configuration database rebuilds the appropriate files

and initiates hup to activate the changes. Building the text files from a database is a much better idea that just editing the text file directly. This way, if a configuration file is edited unwittingly, you can simply update the files with the database and it will be configured correctly again.

If you are comfortable administrating Unix, you won't be bothered by Gauntlet's configuration and administration process because it is very straightforward.

> ▶ Encryption supplements filtering and proxying by encoding transactions as they pass through the network. Analysts say encryption devices will be used more often in the future in conjunction with firewalls.

It takes lots of money and manpower to keep
information systems running.

Or so our competitors would have you think.

Security

■ CheckPoint Firewall-1 2.0

SATISFACTORY

CheckPoint surprised us by having some fundamental design problems. During the system boot, we were able to penetrate the system, leaving it completely unsecure for a few seconds. Although this did not affect the system's security once it was running, we were shocked that such a problem was overlooked by CheckPoint Software. Overall, however, the theory behind CheckPoint's basic design is superior to the other products'.

CheckPoint is the most unusual of the three firewalls tested. It uses a sort of hybrid packet-filtering technology to monitor traffic. To either hide internal IP addresses or use unregistered addresses, CheckPoint provides a unique form of address translation. The system offers all the benefits of traditional packet filtering. It has detailed logging and alerting, allowing you to track even the most harmless activities.

When testing the software on Sun Solaris, we learned more about how CheckPoint interacts with its lower level operating system. During the system boot and before CheckPoint takes control, Solaris' kernel routing is active. At this point, the system is completely open, leaving a wide tunnel for attack.

The lack of examination and understanding of the system-boot procedures is surprising; CheckPoint Software obviously needs to step up the quality-control testing of its software. Fixing this problem is not a matter of redesign but simply of some text-file editing. Needless to say, we were disappointed when we found the problem, and we lowered the product's security score appropriately. We strongly recommend that CheckPoint users examine this problem and find a fix for it that works in their environment.

■ CyberGuard Firewall 2.1.2

GOOD

It requires a fair amount of programming to set up CyberGuard's monitoring and alert notifications, something easily done in both Gauntlet and CheckPoint. Unlike CheckPoint, the system never left our network vulnerable to

Dialog boxes allow for easy configuration of key components.

attack. Also in its favor are its strong security and detailed logging capabilities.

Of the three firewalls, CyberGuard is the most conventional as both a packet filter and an application gateway server. The system also provides network-address translation. This translation service can, for example, take an FTP (File Transfer Protocol) session and change the source address to that of the external interface on the CyberGuard unit. With this you can hide the internal network addresses, thus hindering an attempt by a hacker to determine exactly where to attack.

CyberGuard's system statistics are all in one place and updated regularly.

The system offers detailed logging: so detailed, in fact, that you will probably find yourself using only the lower level logging support, so that you do not have to spend an excessive amount of time digging through the logs to find something.

On the other hand, during a system attack this kind of detailed logging can provide you with some very valuable information.

CyberGuard's alerting system is primarily designed around the idea that you, as a Unix expert, will be able to set up scripting jobs to monitor security logs and alert you in the event of an attack. The graphical interface provides you with some ability to monitor alerts, but no administrator is going to be sitting in front of the console 24 hours per day. We were disappointed by the lack of alert mechanisms built in to the system.

CyberGuard also suffered from some quirks when configuring the packet filters via the graphical interface. If you set a packet filter to allow everything to go to or come from everyone (a relatively useless configuration except when testing) and then switch it back to deny everything from

everyone, it will still let the packets through. To remedy the situation, all we had to do was reboot the system, but this made us scared about just what we could expect the system to update without a reboot.

■ Gauntlet Internet Firewall 3.1

VERY GOOD

With CheckPoint's unsecure behavior and CyberGuard's unpredictable behavior, Gauntlet was the most secure system we tested.

Unlike the other firewalls, Gauntlet allows no direct access to your secure network. All access is determined by Gauntlet's application proxies. Traditionally, this is considered the most secure approach to firewalls because no packets are actually passed through the system. Secure clients request information from the proxy server on its internal side. The proxy server acts as a client on the external side and requests the information, returning it to the proxy server. The proxy server then changes its role from client back to server and returns the information to the secure client. This kind of proxying can also occur from the external network to allow for access to internal services.

Gauntlet offers a bunch of token-authentication schemes, including S/Key, SecureID, SNK, and Fortezza.

A handy PING tool lets you check hosts easily.

SecureID and SNK offer key systems where users carry cards that encrypt their passwords for one-time use with the system. S/Key offers security by providing the user with an initial key. The user then inputs this key with their password; it generates a list of words to be used as log-in passwords.

These types of schemes allow you to provide remote or roaming users access from the external network to your secure internal network. They all let you have a one-time-use password that can be safely transmitted over any network.

Services

■ CheckPoint Firewall-1 2.0

EXCELLENT

CheckPoint is the clear winner in this category because its advanced design lets it support all services, even on an unregistered network. This capability makes CheckPoint an excellent choice for any network that needs access to the latest and greatest Internet services, such as the Internet phone.

It is necessary for a successful firewall to be transparent to users. The more procedures the users face, the more likely they are to do something that will compromise your security. It's also important for the firewall to provide access to as many services on the Internet as possible.

Waiting for a proxy server to be developed for a new application can take a long time, and there are currently no proven standards for proxying at the protocol layer rather than the application layer. (See article, page 81.) CheckPoint takes a unique approach to providing access to all the services on the Internet.

Normally, the fact that CheckPoint is fundamentally a packet-filtering router and not an application gateway would prevent you from being able to use any-

thing other than a Internet-registered network number. CheckPoint's technology allows Internet access even from unregistered network numbers.

A tool watches packets as they pass through the routing system. The mechanism selects any packet it wants to perform this kind of examination for. For example, a User Datagram Protocol (UDP) packet comes in on the internal secure network, and the routing mechanism catches the packet and sends it out on the external network. When the response packet is returned, the system checks the packet against its UDP table to ensure that it is indeed a response

and then passes it back to the internal network. This allows the system to do the equivalent of proxying any service. None of the other firewalls offer this level of protocol support.

■ CyberGuard Firewall 2.1.2

SATISFACTORY

CyberGuard made a poor showing in this category because one of the key services shut down on us a few times. It also does not provide some key services that most sites will require.

CyberGuard offers application prox-

ONE ON ONE · CHRIS W. KLAUS AND MARCUS J. RANUM

Does scanning for vulnerabilities mean your firewall is safe?

A scanner is a device that looks for specific security holes in your network and reports any internal or external network security problems to the administrator. Since the scanner's introduction last summer, there has been a lot of debate as to whether the use of scanners

(such as Internet Security Systems Inc. [ISS]'s Internet Scanner or Security Administrator Tool for Analyzing Networks [Satan]) is an appropriate way to test firewalls for security vulnerabilities.

We asked two security experts — Marcus J. Ranum and Chris W. Klaus — to share their thoughts on the matter. Ranum is the author of several firewalls; fundamentally, he believes using a scanner is an ineffective way to test for security vulnerabilities. Klaus, on the other hand, developed Internet Scanner; obviously, he believes scanners are an effective way to test for security holes. Here's what they had to say.

MJR: Testing firewalls is a tough problem because it combines something expertise-intensive with something that is highly configurable. To set up a firewall, you need to understand the policy you're trying to implement and how to reflect it in the firewall as it is installed. That tells me two things: One — lab tests of firewalls aren't very useful; two — any tests of a firewall will amount to a sanity check of the firewall's policy as well as its implementation.

Lab tests aren't useful because [they create] a completely contrived environment. In the past, I've looked at a large number of firewalls

Few realize that security is part of a process and that it's not a product.
— Marcus J. Ranum

on people's networks and have seen a lot of perfectly good firewalls that were configured to do something stupid once they were fielded. A lab test won't reveal that. To use a poor analogy, a lab test is like crash-testing a car against a predictable object at a predictable speed. In the real world, some firewall administrators drive off cliffs at 90 mph while others eke along the shoulder of the freeway at 5 mph.

Every commercial firewall I've seen can be configured to either permit something stupid coming through in its unsecure mode, or permit nothing through in an absolutely secure mode. What's important about the firewall is less its implementation than how it's fielded. Test tools and lab tests that test the implementation aren't interesting — what we need are tools that tell network managers they've done something dumb. I've seen far fewer firewall problems that are a result of bugs or mistakes than problems that are a result of deliberate decisions to let something dangerous happen.

CWK: A security assessment package can help a network manager determine three things about firewalls: One — has the security policy of the organization been properly implemented on the firewall? Two — is the implemented policy going to protect against outside threats? And three — is the firewall system itself secure?

An assessment tool can help determine what services and exposures are being allowed or denied through a firewall. In short, it can quickly point out violations of the policy and implementation. Many times we find the written policy blocks outside people from con-

necting to the internal network when the firewall is in fact allowing anyone to connect to the inside machines, leaving the entire network open to attack. This is because the firewall has been misconfigured, causing the company to be severely vulnerable. This problem is quite common and can be easily corrected once identified by the security assessment tool.

A security assessment tool can help test the firewall system while it is in the lab to get a baseline of 'is this a secure firewall system?' But once the firewall has been fielded and is being applied in the real world, it is most important to use a security assessment tool to thoroughly check the firewall and its implementation for possible holes in security.

Another necessity for a more secure internal network is using the security assessment tool against the entire internal network. A firewall provides many times a false sense of security because too many people rely on just the firewall, and the internal network is wide open to attack. Intruders can bypass a firewall if anyone in the organization

has an open modem that allows remote access. By using the security assessment tool, you can quickly identify all the machines on your network and possible risks and take the proactive corrective steps in closing these vulnerabilities before an intruder tries to get in.

These security assessment tools tell the network managers they've done 'something dumb.'

MJR: I'd like to make one subtle correction to one of Chris' comments: An automated testing tool can't show that

something is secure, it can only show that something doesn't have an obvious hole. Tools that perform automated testing are valuable only if they are well-maintained and have up-to-date vulnerability information. I think that products like Internet Scanner perform a valuable service in this area because they act as a clearinghouse for vulnerability-testing data. There have been government-funded attempts to do the same thing, but those have been conspicuous failures. So I agree 100 percent that automated testing tools are valuable, if used appropriately.

There are, however, some uses for such tools that aren't appropriate. Testing firewall products against automatic checklists, for example, scares me. If I am buying a firewall, I do *not* want one from someone who has so little comprehension of security that they don't know how to design around all the 'ordinary' known vulnerabilities. I do not, in fact, know of a single commercial firewall that would not resist all the vulnerabilities identified by Satan, ISS, or [Bell Communications Research Inc.'s] Pingware, etc.

CWK: We agree that the most comprehensive suite of tests is going to help

users gain the most insight into how protected they are. If you use a public domain tool that has not been updated in a year and only checks for 10 vulnerabilities, you may easily get a network security report that claims you are safe. But using a more comprehensive tool may show that your total network is completely wide open to attack. This is the main reason why organizations that are serious about security need a tool that is constantly being updated.

Doing a security assessment of a firewall in the lab may reveal some vulnerabilities that should be corrected before it goes into the field. This does not make up for doing the test in the field, though. It is vital to reassess the firewall once it is operational in the field to verify it has been correctly configured and all known vulnerabilities are closed to attack. This is when it becomes valuable to certify that the firewall is not doing anything that the person who configured it overlooked. A security assessment tool should not be a replacement for people setting up a firewall but just a tool to verify that the firewall is not vulnerable to a set of tests.

MJR: I think we've agreed that the tools are valuable if used properly. What concerns me is that now that Internet security is a hot topic, the level of ignorance in the customer community is still very high. Everyone knows they need some security if they're connecting to the Internet, but few realize that security is part of a *process* and that it's not a *product*. When I was selling firewalls and Satan came out, we must have had 2,000 customers ask: 'Does Satan locate any vulnerabilities in your firewall?' Of course not, because it would have been a lame firewall indeed to have such glaring holes, but that's the level of uncertainty our customers feel.

An assessment tool can help determine what services are allowed through a firewall.
— Chris W. Klaus

I believe that there is, or is about to be, a lot of marketing of automated audit tools as 'firewall tests' to make customers more comfortable. But making customers more comfortable in their ignorance is not security, either. What I want to see, and I challenge the audit-tool developers to deliver, are tools that enhance the customer's understanding that security is an ongoing process. Support them in that, and you get my vote. I think it's a cop-out to say, 'Run my tool every month and see how your network is.' The tool should run itself every month, or week, or whatever, and tell the customer not only what the problem is, but its significance and how to fix it. I think

CONTRIBUTOR

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we are heading in that direction, and that's a good thing that can't happen soon enough. What I don't want to see are vendors announcing 'Satan-tested' firewalls as a ploy to make customers feel warm and fuzzy and secure.

CWK: We also agree that security is a

ies for basic services such as e-mail, Domain Name Service (DNS), HTTP, Network News Transfer Protocol (NNTP),

CheckPoint is aware of all common services.

FTP (File Transfer Protocol), Telnet, and rlogin. But of the three servers, CyberGuard has the least support for access to the Internet from an unregistered or hidden domain.

Even though the system does provide address translation, it warns you that even HTTP will not function through the server with the translation turned

process of continuous improvement. New machines, new applications, new versions of operating systems, new firewall configurations, and newly discovered vulnerabilities create an everchanging security profile. This dictates that the end-users and vendors of security audit tools must work in a continuous mode. On our end, we are con-

on. CyberGuard does not provide any pluggable proxy servers to allow for services such as Whois and Finger. It does not support X proxying either.

On the positive side, though, Cyber-Guard provides a Socks 4.2 proxy server. This will allow you to use applications such as Real Audio. We can also assume that with the release of Socks5, CyberGuard will upgrade its services to support proxying of everything.

In using all the services we were left feeling uneasy, as we felt with the configuration. The DNS services shut down on us a few times and required us to restart them.

This shutdown could be a network manager's worst nightmare when the entire company is calling her to say that the Internet is down.

In the end, we felt that CyberGuard was best used as a packet filter.

stantly extending the number of vulnerabilities we check as well as the usability of our product. End-users must consistently audit their security practice in a reliable fashion.

Marcus J. Ranum is chief scientist of V-One Corp. He is the principal author of several Internet firewall products, in-

cluding the Trusted Information Systems Inc. Gauntlet and Internet Firewall Toolkit. Chris W. Klaus formed Internet Security Systems Inc. in 1994; he developed Internet Scanner. In addition to his development activities, Klaus has provided security consultation to a number of organizations, including NASA.

▶ Gauntlet Internet Firewall 3.1

GOOD

Gauntlet uses proxies as its method of talking to the outside world. Gauntlet's services are stable, effective, and fast; however, Gauntlet does not support the Socks proxy server, which prevented it from receiving a higher score.

Gauntlet uses TIS' Firewall Toolkit to provide outside access. These services have been proven on Internet servers for years. They are considered, as Socks is, the standard in Internet proxying applications.

The Firewall Toolkit has proxies for HTTP, Gopher, FTP, Telnet, the BSD R-services, and X Windows. It also has a pluggable proxy that can be used to proxy nearly any TCP protocol. This feature enables proxying for SMTP, NNTP, Whois, and Finger.

During our testing, it was easy to tell that these services had been in use on the Internet for many years. These gateways are fast and allow for generally transparent access to the outside world. We downloaded files from a set of machines and were quite happy with how well the system handled the multiple re-

Gauntlet reports can be generated via a Web-browser interface

quests and how fast it proxied the video we downloaded.

We were disappointed to see that the Socks proxy was not supported. Without this, you cannot use the latest applications, such as the Internet phone.

Eagle poised to prey on the Windows NT market

By Brooks Talley

Firewalls have changed quite a bit in only a few years: Vendors are regularly adding new features and making administration easier, as well as devising new ways to implement security. However, one thing has remained constant: Firewalls run on Unix. Raptor Systems Inc. is the first major firewall vendor to market a Windows NT version of its firewall. It's called Eagle NT.

We installed Eagle on a Dell Computer Corp. Dimension XP90 with 32MB of RAM. The installation program itself was very straightforward. Once Eagle was installed, its performance was similar to that of the Unix-based proxy servers we tested — network performance was only negligibly slower when accessed through the proxy.

Eagle is fundamentally an application gateway. It supports all common services, such as HTTP, FTP (File Transfer Protocol), and SMTP. In addition to its built-in proxies, the Generic Service Passer can be configured to accommodate incoming traffic, such as Network News Transfer Protocol. For bidirectional TCP traffic, Proxyd Daemon, a proxy-to-proxy server for use in accessing Usenet news services, can be configured to allow a predefined service or port number

It is puzzling that although Eagle runs on Windows NT, its creators equipped it with an X Windows look and feel. Despite this, it was easy to use.

to pass through. Eagle wisely cautions against using Proxyd because it could be configured to allow inherently unsecure protocols through.

Unfortunately, Eagle doesn't support User Datagram Protocol proxying, which means that Internet services such as Real Audio will not be accessible to users inside the Eagle firewall.

What is most puzzling about Eagle is the appearance of its user interface. Apparently in a bid to make Unix administrators more comfortable with the product, Eagle has

forgone the standard Windows NT user interface. Instead, the dialogs are distinctly X Window-esque. Although it is not a problem, the interface's behavior will be a bit disconcerting to Windows NT-based shops that have never dealt with Unix.

Despite its Unix look and feel, Eagle's administration interface was very easy to use, although it does not make use of Windows NT's users and groups. Using Eagle's own tools, we created several users and groups and configured various rules for them. Eagle supports both password and S/Key token-authentication schemes and a wide range of access rules.

Raptor has dealt with one of the primary concerns IS professionals have about firewalls on NT: security. Eagle installs on a Windows NT workstation or server and disables NetBIOS, Dynamic Host Configuration Protocol, Windows Internet Naming Service, and Remote Access

Service. Not content with securing the system at installation, Eagle installs the appropriately named Vulture service, which checks for and terminates nonsystem processes every 60 seconds while the firewall is running.

Should IP forwarding or source routing be enabled accidentally (or maliciously), Vulture will also disable them.

Eagle also sports a robust notification engine, called Suspicious Activity Monitor (SAM), that can be configured to notify an administrator by audio, e-mail, pager, or even fax. SAM never sleeps and will shout for help whenever traffic exceeds the thresholds an administrator sets. For example, we configured SAM to notify us if more than two Telnet sessions were opened from a trusted host on the outside of the firewall. Overall, Eagle is a viable solution for Windows NT shops.

Raptor markets an entire suite of network security products, including an Eagle firewall that is available for multiple flavors of Unix. Also included in its product line is EagleNomad, which is designed for mobile users who require remote access to their internal networks via the Internet. The company is based in Waltham, Mass., and can be reached at (617) 487-7700 or via the Internet at http://www.raptor.com.

HOW WE TESTED

WITHOUT SECURITY, there was absolutely no point in doing this comparison. We wrote our test plan with that in mind. Of course, the easier a firewall is to set up and administer and the more services it supports, the better. We considered all these factors, but the overwhelming focus of our tests was on how well a product kept our network safe while still giving users access to the Internet. As usual, we also looked at documentation, technical support, support policies, and price.

PERFORMANCE

Installation and initial configuration

In this category, we expected each product's default security setup to be 100 percent secure. To make sure that it came this way, we ran Internet Security Systems Inc.'s Internet Scanner against the default configuration. At a minimum, a product had to be completely secure once installed.

Products that were easy to install received bonus points. If the product provided by the vendor included on-site installation and configuration, we gave it bonus points. If the completed installation resulted in a unsecure environment, the product received a score of unacceptable.

Administration

Setting up and administrating your firewall should not be taken lightly: It's something that should be left to an expert who understands security issues and your corporate security policies.

Ease of use isn't the most important factor when executing a firewall: clarity and efficiency are. Therefore, we didn't lower a product's score if it lacked a GUI or if it used both a text-based menu and GUI. However, if it had both, we did expect it to clearly define which functions

were performed by the GUI and which were performed by the menus.

We also expected a product to come with useful administration tools. We raised a product's score if its user interface was particularly useful or if it had exceptional logging capabilities. We lowered a product's score if it was difficult to configure or if it had questionable notification and logging.

Security

We expected a product to provide maximum security to our network and at the same time allow our users access to the Internet. If a product was unsecure at any moment during our tests, even if only for a few seconds, it didn't receive a score higher than satisfactory. Because hackers are constantly inventing new ways to penetrate secure networks, a commercial product can never be 100 percent safe: Thus, a score of excellent was not possible in this category. If a product failed to report harmless attacks or logged attacks incorrectly, we lowered its score. Obviously, if it failed to report serious attacks or in any way compromised the network's long-term security, it received an unacceptable.

Services

There are a countless number of services available on the Internet and, unfortunately, they're not all safe. Consequently, firewalls provide proxies to prevent direct physical contact between the site requesting the service and your network. For this task, we looked not only at the number and type of services supported by each product but also at how safely the services were implemented. The easier it was to configure, monitor, and track the proxies of these services, the higher a product's score. If a product could support an unlimited

Socks5: The better way to travel

By Mark Pace

For many years, proxy servers have been greatly hindered by the fact that they can't proxy User Datagram Protocol (UDP) services. UDP, unlike Transmission Control Protocol (TCP), transmits information uninterrupted, making it much faster and better suited for certain services. Streaming audio is a good example of when UDP is more appropriate than TCP. TCP sends a packet, then waits for the response that says, "Yes, I got it." UDP on the other hand, sends a packet on its way, then sends another one without waiting or caring if the first packet made it to its destination. It's better to drop a tiny bit of sound and still hear the audio stream than to stop the entire stream from playing while waiting for TCP to correct whatever error occurred.

To save the day for proxying, Socks5 has been developed. The Socks5 protocol, also known as authenticated firewall traversal, is an open Internet standard for performing network proxies at the transport layer. It has been published to the Internet Engineering Task Force standards and is covered by the RFC 1928 standard.

The previous version of Socks required a simple entry into the code of a client program that requires proxying. Unfortunately, most of the software in use today is

supplied only in binary format and is, therefore, impossible to modify. To solve this problem and add support for UDP, Socks5 modifies the socket layer instead of the client application. This allows the client applications to be completely unaware of the Socks proxying that is occurring. This kind of proxying allows any client behind a firewall and/or on an unregistered Internet IP network number to gain access to all of the services that the Internet offers.

Socks5 also addresses the requirement of powerful authentication before allowing proxying. This kind of authentication could allow safe proxy access to the corporate secure network. Socks5 also offers access to the Generic Security Service API. This API allows for message integrity and confidentiality and is covered by the RFC 1961 standard.

NEC Corp.'s Networking Systems Laboratory is currently leading the pack with Socks development. It has servers covering most popular Unix platforms as well as a server for Windows NT. Most of its products are still in beta testing but are downloadable from NEC's servers.

Socks5 solves the problems of its predecessor and adds new, useful functionality. It looks like a boon for the proxy market. For more information on the Socks5 protocol, see NEC's Web site at http://www.socks.nec.com.

number of services safely, it received a score of excellent. If a product did not support major services such as FTP (File Transfer Protocol), HTTP, Telnet, and SMTP, we lowered its score.

SUPPORT AND PRICE

Documentation

We expected the documentation to give explicit directions on how to best install and configure the product. We awarded bonus points for a quick-start guide,

online and written tutorials, a quick-reference card, thorough online help, and other useful materials. Poor organization, missing information, or an incomplete index lowered the score.

Technical support

We based technical support scores on the quality of service we received during multiple anonymous calls to the vendor. We awarded bonus points for extra helpfulness or useful tips and subtracted points for unreturned calls and long waits on hold.

Support policies
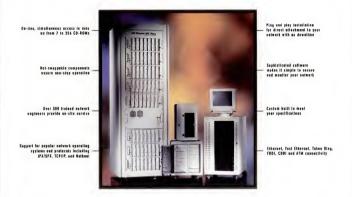
To receive a score of satisfactory, a product had to provide some period of free support and at least one alternative to the phone, such as support via CompuServe, the Internet, or a private BBS. We gave bonus points for a money-back guarantee, extended support hours, a toll-free line, and custom-support plans.

Price

The price score reflects the cost of the package, taking into consideration the competition and the intended market. The score does not reflect the product's overall value, nor do we consider performance or other added features.

Testing configuration for Internet firewalls

Test bed

External/unsecure network — Windows 95 client, X-server, Web server

Internal/secure network — DNS/SMTP/Telnet/FTP server, Web server, X-client

Unix client, Internet Scanner, Firewall/proxy server, Windows 95 client, Windows 95 client, Unix client

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AUG. 5 ENTERPRISE COMPUTING *FEATURE:* With seemingly everyone building intranets and Internet sites, there is a high demand for Web developers. What should you look for in a Web developer, and how can you hold on to the top people? This feature looks at the problems and offers guidance to managers looking to develop intranets and Internet sites.

PRODUCT COMPARISON UPDATE *133-MHZ PENTIUM NOTEBOOK PCS:* Mobile computing is more than a pipe dream these days, but to make it work you need the right tools — such as these high-end workhorse notebooks that take on the desktop in speed and expandability. We examine two 133-MHz Pentium notebooks that weren't here in time for our June 24 Product Comparison: the Ascentia 350 from AST Computer and the Versa 6030H from NEC Technologies Inc.

AUG. 12 ENTERPRISE COMPUTING *FEATURE:* Asynchronous Transfer Mode (ATM) adoption has fallen short of early expectations and faces increased competition from switched LANs and high-speed Ethernet. But it continues to be deployed in specialized situations. We explore the promise of ATM and what has actually been delivered, and we show where it is having an impact.

PRODUCT COMPARISON *COLOR PRINTING SOLUTIONS:* Widespread deployment of color printers has been "just around the corner" for years. Is now the time? We take a snapshot of the color market, looking at four print technologies — laser, ink jet, solid ink, and thermal wax transfer — that promise to take your office over the rainbow.

IN FUTURE ISSUES ENTERPRISE COMPUTING *FEATURE:* More and more employees surf the World Wide Web, use e-mail within and outside of their companies, and

pull information off the Internet. This phenomenon has had a large impact on the way we do business, but it has also raised concerns about electronic privacy. This feature looks at what you need to know and what policies you need to develop to protect your corporation and yourself.

PRODUCT COMPARISON *AS/400-TO-LAN CONNECTIVITY:* If your company has invested in AS/400 technology but has also implemented a LAN, it makes sense to integrate the two. Doing so allows your end-users to access AS/400 data through PC applications. There are a number of options for making the connection, such as using a gateway or TCP/IP. The trick is finding the right combination of technologies and products for your site. We look at AS/400 Client Access for Windows 95, from IBM; Extra Personal Client, Version 6.1, from Attachmate Corp.; Microsoft SNA Server 2.11, from Microsoft Corp.; NetWare for SAA, AS/400 Edition, from IBM and Novell Inc.; Reflection for the AS/400, Version 6.0, from WRQ Inc.; and Rumba Office 95/NT, Version 5.0, from Wall Data Inc.

ENTERPRISE COMPUTING *FEATURE:* What security measures do you have in place? And how do you know they are effective? This feature explores the world of C2-level security, Microsoft Corp. has always touted Windows NT's C2 security, but how many people know what that means? We take an in-depth look at what it means to have C2 security and how you can ensure that your systems are secure.

PRODUCT COMPARISON *BACKUP SOLUTIONS:* Backing up a mixed-platform network is a dirty job, but more and more IS managers have to do it. We test four solutions for reliability over a range of platforms, including Windows NT, Windows 95, Windows for Workgroups, Unix, and Macintosh. Our solutions include ArcServe, from Cheyenne Software Inc.; Backup Exec, from Seagate Software Inc.; NetWorker for Windows NT, from Legato Systems Inc.; and StorageExpress, from Intel Corp.

PRODUCT REVIEWS

▶ Electronic document management software

Docs Open moves to enterprise

By Jeff Senna A few years back, document management systems were common mostly in legal firms and other paper-driven companies. As enterprises have become more complicated, the need to better manage legacy electronic documents has

GROUPWISE AND SMARTER

With a universal inbox and Novell Directory Services-managed user profiles, the new GroupWise 5.0 from Novell Inc. looks like hearty competition for Lotus Notes and Microsoft Exchange. Look for our review of Beta 2 next week.

TALK BACK

Questions, comments, kudos? Send a message to the reviews editor at dan_sommer@infoworld.com. Please include "Talk Back" on the subject line.

grown more critical. PC Docs Inc.'s Docs Open 3.0 has gracefully kept pace with this trend by offering what its customers need: a powerful, open system that fits well in many types of enterprises.

Rather than a complete makeover, Docs Open 3.0 fixes some of its previous shortcomings — most-

ly in security and indexing — and now includes some strong enhancements for mobile users. In addition to the standard Docs Open application, which runs in a client/server environment on a variety of network operating systems (NOSes) and Windows or Macintosh clients (Version 3.0 for Macintosh is currently in beta), optional modules complete the enterprise family.

These modules are completely integrated and enhance security, workflow, rapid application development, and mobile computing. Unfortunately, being optional, they cost extra. The Document Sentry Agent (DSA) module, for example, would be much more useful if it were included in the standard package, because most organizations will need this level of security.

It's now faster and easier to get up and running, due in part to enhancements in Windows NT Server 3.51 and Microsoft's SQL Server 6.5. It's also easy to mix and match NOS environments with simultaneous SQL and NOS support. And Docs Open now provides an easy way to selectively import users and groups from NetWare 4.x and Windows NT Server 3.51. Moreover, the alias feature allows Docs Open to support simultaneous networks regardless of which network you logged on to.

The Docs Open Desktop Windows client (although still 16-bit) runs smoothly on all versions of Windows. Because it's 16-bit, it's still prone to system crashes and does not provide the ease-of-use features found in the newer 32-bit applications; nonetheless, I had no problems with the desktop.

Docs Open handles application integration by either application-specific macros and extensions (.DLLs) or Open Document Management Architecture (ODMA) compliancy. ODMA compliancy also gives Docs Open the capability to work seamlessly with a long list of other types of electronic document management or document image management applications. In

VERSION 3.0, although not a complete makeover, has given a new look to old friends. This dialog box lets you set access control.

addition, Docs Open supports most e-mail applications.

Administrators can use Docs Open's abundant tools, which allow customization of various database tables, the ability to import vast amounts of documents and automatically create profiles, and the ability to customize profile forms.

I especially like the optional DSA, priced at $995, which provides a much-needed NOS-independent security layer. A Windows NT service, DSA acts as a virtual gatekeeper for documents stored in a DSA-secure document server.

Unlike non-DSA libraries, in which a user (with NOS-level access) could potentially circumvent Docs Open and access files on document servers, DSA grants write or read access (depending on whether the user is editing, viewing, or printing) only temporarily. I was granted access only if I had the appropriate rights for a document.

Files stored on a DSA-based document server also have an audit trail separate from SQL-based transactions. This lets an administrator view pertinent information regarding a document's history — such as access date and time, duration of access, type of access, document version accessed, and user name.

Docs Open 3.0 has enhanced its indexing and search capabilities by replacing the Infolink engine, which shipped with Version 2.x and earlier, with Verity Inc.'s full-text engine. Docs Open libraries can now have multiple indexing stations working collectively to index thousands of documents in a fraction of the time previously required. Moreover, the Verity engine brings with it the

capability to perform fuzzy or concept searches and provides relevancy-ranked, sortable hit lists for searches and multilevel queries, which can be saved for reuse.

Docs Unplugged, priced at $79 per client, is a beefed-up version of Docs Open's popular Docs Mobile module in Version 2.5. In addition to providing mobile connectivity, Unplugged would let me work in stand-alone mode in the event of a network failure. In this scenario, my

documents would be automatically shadowed (copied) to the local hard drive, and profiled data (meta data normally stored in SQL tables) would be written to my local Sybase SQL Anywhere database (formerly Watcom SQL Server). This would give me full Docs Open functionality off the network. Any changes would be automatically resynchronized.

Playing on the same idea, Docs

Open now provides the Mobile Team option, priced at $1,995, with which remote workgroups that are not connected to the corporate network can still access Docs Open libraries through proxy. At a remote site, I could configure one machine as my server and have my other clients connect to it using Windows 95. Those clients could access documents and profiles from SQL Anywhere on my server machine. I could resynchronize the corporate libraries and deliver the most up-to-date documents and associated profiles.

The optional Docs Interchange for Microsoft Exchange, which costs $4,995, enhances workflow and information sharing by letting users publish document content and profiles stored in a library to specific public folders.

PC Docs is currently working on three separate Internet initiatives that will help bridge the gap between global Docs Open users. Mercury is the code name for the first product that will enable users to search and retrieve documents stored in a Docs Open library from a Web browser.

Also in development is Venus, a product that extends this idea by using the Internet as a global WAN. And with yet another new product, Jupiter, Docs Open users will access document servers over the Internet in a multithreaded client/server environment.

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▸ Windows document authoring application

FrameMaker 5 reworks online publishing, page layout tools

By Mike Heck

ANYONE WHO'S an old hand at designing automobile service manuals, aircraft documentation, catalogs, or similar complex documents on a computer probably learned the process on a Unix workstation. And the software was likely Interleaf Inc.'s Interleaf or Frame Technology Corp.'s FrameMaker. (Frame Technology was acquired by Adobe Systems Inc. in October 1995.)

As writers, artists, and other document contributors switched to desktop PCs and Macintosh systems, FrameMaker made the transition, too. Adobe FrameMaker 5, the first Adobe-labeled version of the software, does not introduce any revolutionary features. Still, better cross-platform compatibility and ease-of-use improvements are reason enough to upgrade.

If you need the best multiplatform compatibility, FrameMaker 5 edges the competition. Likewise, I found it easier than with other packages to accomplish typical long-document tasks — from changing paragraph styles and building indexes to automatic numbering and creating various versions of a document according to different conditions.

FrameMaker 5's design employs a book metaphor, with pages that hold individual items, such as tables or graphics. The program's clean interface hides unnecessary menus, which helps writers use built-in word processing functions or allows illustrators to concentrate on graphic tools.

FrameMaker 5 employs Windows 95 look-and-feel conventions, including tabbed dialog boxes and context-sensitive menus that appear with right-mouse clicks.

To check Windows 95 compliance, I dragged text from a Microsoft Word document into a frame. FrameMaker 5 also acts as an OLE 2.0 client, so I easily embedded a Microsoft Excel spreadsheet within a page and edited the data in place. Windows 95 long file names were especially useful when moving text and graphics among Macintosh and Unix systems, because it was not necessary to constantly rename my work.

Moreover, you may activate a compatibility preference that checks for potential problems, such as invalid file names, when sharing books with FrameMaker 5 for Windows.

FrameMaker 5 includes extra layout options. For example, I used the revised Paragraph Designer dialog box to specify that certain headlines and graphics straddle multiple columns; this is better than creating separate frames, because edited text automatically reflows around the straddling element.

The software also gives you more options to lock frames into position, which helps maintain the correct position of text that runs around a graphic.

Past versions maintained links to external graphic files, which was

valuable, say, if graphic artists updated illustrations outside of FrameMaker. FrameMaker 5's new Import Text by Reference command provides a similar dynamic link to word processing files. Adobe has also improved cross-platform import and export filters. I didn't have any problem importing MacWrite text, exporting text in Interleaf format for Unix, or using many of the other transfer options.

FrameMaker 5 includes several options for online publishing. A built-in filter converts paragraph and character formats to HTML tags. The Hotamale plug-in (which

FRAMEMAKER 5'S enhanced paragraph options let headlines, graphics, and tables straddle multiple columns.

was beta software) gave me expanded options, such as a way to selectively change paragraph and text HTML tags. This can be accomplished quickly by using a dialog box or by editing a table that contains mapping information. Further, the plug-in split the main book into multiple HTML files (at places I indicated) and then linked everything to a new table of contents HTML file.

Even if you don't use FrameMaker for Web publishing, the software accommodates hypertext and cross-reference links within documents. These connections are preserved when converting a document to Adobe Acrobat Portable Document Format (PDF). In fact, you don't need to create PDF files; FrameViewer, which costs $29, lets others view FrameMaker documents directly.

FrameMaker 5 continues to provide essential document design and formatting functions. You can mix master pages, create graphics within the package, and develop tables.

Corel Corp.'s Ventura 7 (see Product Reviews, July 15, page 99), which is available only for Windows 95 and Windows NT, includes more graphic design tools, as well as expanded table functions with formulas. Ventura 7 also has better document comparison and archiving functions and more extensive HTML conversions with Java support than FrameMaker 5.

If you work exclusively with Windows 95 or NT, Ventura 7, with a list price of $895, is a viable option.

Mike Heck, an InfoWorld contributing editor, is manager of electronic promotions for Unisys Corp., in Blue Bell, Pa. He can be reached at mike_heck@infoworld.com.

▸ Windows computer-based training software

Allen's Quest Net+ brings CBT applications to Internet

By Ean Houts

ALLEN COMMUNICATION Inc.'s Quest has long been one of the most popular choices for creating computer-based training (CBT) applications. The latest version, Quest Net+, brings Quest at least halfway into the Internet Age by including peer-to-peer TCP/IP networking capabilities, the capability to access any URL, and new hypertext features.

Although these features fall short for creating full Web applications, they open up a wide range of possibilities for extending existing training applications.

And if you need something extra that can't be easily done with the included tools, an integrated C compiler is included.

In Quest's Frame Edit mode, you can access Quest's new Internet features. Four of the five new objects

deal with peer-to-peer connections, and the fifth enables you to specify a URL as an object, giving your Quest application access to almost anything on the Internet.

Using a Peer Connect object, I was able to connect to another Quest title (a Quest application is referred to as a "title") running on a different machine, and then, using another Peer Connect object on the other machine, that system was able to listen for the first object.

By specifying an alias I could determine which title or group of like titles could be connected to or listened for. The system to connect to can be determined explicitly by using the system name or IP address or by using a variable to dynamically select the desired system. The listening system can either listen for all connections or from select aliases.

This is especially handy for classroom environments, because it lets the instructor get real-time feedback on which students may need help in a particular exercise, for example.

Peer Disconnect does what its name implies — disconnects groups of titles by their alias. Peer Send can send messages to other Quest titles and works hand in hand with Peer Monitor, which scans for messages on the receiving system. I found this to be a bit tricky, but the manual effectively points out the pitfalls of potentially lost messages.

My only complaints about Quest Net+ are relatively minor. The installation overwrote some of my DLLs, even though the originals were more recent. Some way to generate and interact with Web pages would also be a welcome feature.

Ean Houts is a software quality assurance engineer with Quintus Corp. He can be reached via e-mail at eanwaner@earthlink.net.

DOWN TO THE WIRE · NICHOLAS PETRELEY

An appeal to readers: Test Center asks for help in testing technologies

W E'RE EXPERIENCING the expected growing pains during our move to explore more complex and relevant ways of testing, and we would like your help. Our new and modified approaches to testing have led to a three-way split in the types of information we present in Product Comparisons: products that represent only themselves (product comparisons, our traditional approach), products that constitute more complex solutions to business IT problems (solutions comparisons), and products that represent technologies or computing strategies (technology comparisons).

Product comparisons compare like products, such as Web browsers.

Solutions comparisons ask vendors to compete the same way they would compete for your dollars. We pose the problem, and they help us define a solution consisting of one or more products. Then we compare all the solutions.

Ni, technology

Technology comparisons give us the opportunity to ask if one type of product is better suited to a task than another (RISC-based vs. CISC-based graphics workstations), rather than comparing two identical types of products (Brand A vs. Brand B Web browsers).

Unfortunately, we have discovered that technology articles are more problematic than other comparisons, and that's where we could use your help. We've noticed that technology comparisons can be misleading if they're misinterpreted to represent products rather than technologies.

Take our recent Product Comparison on network upgrade solutions. (See "The 100VG solution," April 29, page 1.) We compared various means of getting video to the desktop, including shared 10Base-T, desktop-switched 10Base-T, segment-switched 10Base-T, switched 100Base-TX, and switched 100VG-AnyLAN.

Of the solutions, any relying on 10Base-T were by far the slowest (big shock). The information was presented to put the other technologies in perspective, not to "slam" 10Base-T. But slam it we did.

That's where Bay Networks Inc. (http://www.wellfleet.com), the makers of the LattisSwitch 28115 that we used for the 10Base-T solutions, took us to task. According to Bay Networks, its product will now be associated with the two lowest scoring solutions in the article, and that made a great product look bad.

They may have a point. I am unsympathetic with vendors that have inferior products and complain about their scores. But it serves neither you nor the vendor to represent a good product in a bad light.

So it is unfortunate that Bay Networks happened to be the vendor that supplied us with the one technology anyone could have guessed would not stack up to competing technologies.

If anyone interprets the score to reflect on the product, however, it would be a grave mistake. In fact, our IS department likes Bay Networks' products so much, it recently bought one for our production network.

Hide and geek

We kicked this problem around and came up with a few possible ways to avoid it.

For one thing, we could omit scoring technology or strategy comparisons. The aforementioned comparison would present the alternative strategies to get video to the desktop, the products we used, and our results. Our conclusions would show up in category scoring, benchmark tables, and the text but not in a bottom-line score.

Personally, it would take some convincing to win me over to this approach. It reduces the value of our comparisons. *InfoWorld* scores are gutsy. We're not afraid to attach a number such as 8.6 to segment-switched 100VG and 6.2 to segment-switched 100Base-TX to make your buying decision abundantly clear.

Second, the product might not be associated with a score, but it would nevertheless be associated with its benchmark. Because benchmarks are usually one of the key components (if not *the* key component) of a comparison, that puts us back to square one.

Alternatively, we could identify only those products that are being compared for clearly competitive reasons (such as the 100Base-TX and 100VG products). We would withhold the names of the products we used to create the baseline solutions that put the other strategies in perspective.

This has the merit of revealing the names of the products we used for the viable solutions, which is the indisputable focus of the comparison. Does the legacy technology really matter? Well, yes. Sometimes it might win. Often, the decision not to upgrade to a newer technology is the best decision.

Finally, we could compare and score the strategies but not identify any of the products we used. We would instead list in a table many of the products that you could choose in each of the technologies we compared. The specific products we tested would, of course, appear somewhere in the list, but you wouldn't know which ones they were.

Maybe I'm being paranoid, but I have the greatest problem with this alternative. Sure, it provides you with the answer to the problem the comparison poses. But it *feels* slimy to hide the names of the products we used.

Eliminating information about a viable solution may leave some readers' questions unanswered. This essentially protects vendors at the cost of our readers, which is a critical departure from *InfoWorld's* charter.

Let the reader decide

That's my opinion, anyway. But my preferences don't amount to much more than the recycled paper they're printed on if our comparisons don't give you the information you need. So I invite you to vote for or against these suggestions, amend them, come up with your own, or just offer your opinion.

In other words, *you* tell us what you'd like us to do. Being fair to vendors is the right thing, so this is a problem we must address. But even though happy vendors may better enable us to do our jobs, happy readers enable us to have jobs.

And e-mail makes for happy editors. Send some to nicholas_petreley@info world.com, *or visit my forum on* InfoWorld Electric *at* http://www .infoworld.com.

▶ **Multimedia projector**

Colorful Viewpoint suffers from poor quality control

By Brooks Talley

I TESTED LIGHTWARE Inc.'s Viewpoint projector — two of them, actually — and, based on the units I saw, I wouldn't recommend it to anyone. To be sure, the color was good, and it's bright. But both projectors managed to self-destruct after a few hours of use. Viewpoint has received rave reviews elsewhere for its picture quality and brightness, which are certainly acceptably good for the price. But from my experience, I'd recommend something else.

It's understandable that one projector might have a flaw. But then the second failed, and Lightware would not send yet another replacement. Two out of two is admittedly a small sample, but imagine having installed one of these in your conference room right before presenting a budget. After several hours of use, the first

VIEWPOINT lightweight, although handsome and portable, has serious design flaws.

projector began emitting a caustic smoke as the power switch melted its insides. It turned out that, although every fuse in the unit was rated at 8 amps, the power switch was rated at only 6 amps, so any failure would necessarily happen there.

The company promptly replaced the first defunct unit with a brand-new one, and I thought all was well. Then after several hours of use, disaster struck again. The halogen bulb exploded and broke one of the mirrors in the projector, resulting in a rain of tiny glass particles covering several feet.

At that point, Lightware was unwilling to supply me with another projector to continue testing.

Viewpoint seemed like a fantastic package at first — its 270 ANSI lumens may not allow presentation in full daylight, but it's certainly bright enough for most conference rooms, with only slightly dimmed lights. And its colors are crisp and look great for both data and video presentations. (The unit offers VGA, Macintosh, composite, and S-Video inputs.)

Weighing in at just 9.4 pounds, Viewpoint comes with a spiffy remote control, which can be used to control the unit if it's mounted on the ceiling, and a nice foam carrying case. Not that I'd recommend taking one of these to a client's site to give a presentation — not if you

want the account, anyway.

Brooks Talley (brooks_talley@info world.com) is a technology analyst in the InfoWorld Test Center.

DISTRIBUTED THINKING · STEWART ALSOP

Confessions of a Web addict: Let me do real business at your Web site

TELL ME IF I'm being unreasonable. The experience I've had using the World Wide Web is beginning to change my most basic expectations for service from all the vendors I deal with, both personally and professionally.

For example, I'm a customer of Wells Fargo Bank, which has been very aggressive in adopting the Web and now allows me to look at my account records and transfer funds among my accounts with my Web browser. I fly a lot on United Airlines, which lets me check the status of my Mileage Plus account on its proprietary service, United Connection. But, unfortunately, if I want to actually use those miles to buy a ticket, I have to call, make a reservation, and wait 10 days.

I am also a customer of Pacific Bell, AT&T, Cellular One, TCI, Visa, CSAA insurance, and a host of other vendors, but I cannot check the status of my accounts with any of them on the Web. I subscribe to a dozen different magazines, but I've found that it's dicey as to whether I can pay for my subscriptions using either CheckFree or my credit card. Most of the publishers' payment systems force you to use only a paper check.

The three daily papers I subscribe to all have Web sites, but when I logged on, I could not find directions for putting a hold on print deliveries while I'm on vacation. Neither the *San Jose Mercury News* nor *The Wall Street Journal* allow me to combine the cost of my interactive and print subscriptions, forcing me instead to pay with my credit card.

Get my drift? Start using the Web enough, particularly if you start to do business with a few Web-only businesses, and it begins to affect how you expect to do business with any vendor. In fact, you actually begin to expect non-Web vendors, particularly those with any kind of Web presence, to meet the same service standards as those Web-only vendors. (Two Web-only businesses that I particularly like are Virtual Vineyards [http://www.virtualvin.com] and Internet Travel Network [http://www.itn .net].) Personally, I'm willing to switch to those vendors that fully incorporate the Web in their operations (of course, that's not possible with local phone or utility suppliers).

In other words, I think it's time for IS organizations to start figuring out how to integrate the Web into their fundamental billing systems, customer-records management, and operational systems, and — most important — how to give customers direct access to services and their own records. The Web is rapidly becoming a competitive issue for every commercial organization in our society.

Is Netscape dead meat?

Can you believe I can even ask this question publicly? Here's a company that has been wildly successful making a really, really popular product and that stole a march on what many consider to be "the most evil and aggressive software company in the history of mankind." Netscape has been so successful that those nuts on Wall Street actually believed at one time that it was worth as much as 100 times its revenues. It has been so successful that it will generate about $200 million in revenue in its second year of operation.

Today, everywhere I go, people agree that Microsoft makes better Web browser and Web server products, and that Netscape is arrogant and out of touch. Wow! I don't know whether to feel sorry for Netscape, admire Microsoft, or move to a different country.

I do feel sorry for Netscape, because it certainly seems to me that these people have worked hard to update their products and to make them functional and relevant to their customers — the kind of stuff that is usually rewarded with financial and critical success. (I still use Netscape Navigator. Based on my

Macintosh experience, I think I have another six Web years before I will throw in the towel and start using Internet Explorer.)

And I certainly admire Microsoft. Here's a company that had no Internet culture in its bones as recently as a year ago. Yet it has succeeded in focusing on the problem and persuading even hard-core Webmasters that it now has better products than Netscape and will soon dominate the field.

I sometimes want to move to a different country, because I suspect that Microsoft will soon be the chief governing force in the United States. I don't think I will be comfortable in a country where Bill Gates is president (or whatever we call the chief executive then). If Microsoft can beat Netscape, IBM, Apple, and every other major opposing force, and it can own and produce news (MSNBC) and commentary (Slate), then I don't see where the company will stop short of buying the government. It is important to stop and smell the roses every once in a while. And a country that only cares about winning would be a poor country, even if it is rich and successful. That's probably the kind of country the United States of Microsoft would be.

So please, Jim Barksdale and Marc Andreessen, you have a serious responsibility to get rid of this arrogance very, very quickly, get back in touch, and figure out how to knock Microsoft off balance — again. Please.

Is Stewart being unreasonable? Join him on his InfoWorld Electric forum (http://www .infoworld.com) to discuss how IS should integrate the Web into corporate operations. Stewart Alsop is a partner in New Enterprise Associates, a venture capital firm, and is the former editor in chief of Info-World. He can be reached at stewart _alsop@infoworld.com.

NOTES FROM THE FIELD BY ROBERT X. CRINGELY

Bobby mounts Olympian effort to vault over the media gates of Microsoft

MY BOBBY LOVES a challenge. Microsoft. Me. Between us, we had him competing like an Olympian, and when Bobby sticks it, well, let me just say it's a perfect 10.

Some reporters might choke when they're dissed by Microsoft, but not Bobby. Forget that he didn't make the invitation list to join Microsoft's top-secret media briefing last week. He saw it as an opportunity to have a little sporting fun with his foes in Redmond. Just think of it as the Microsoft Triathlon.

Event one

Presumably, the briefing gave a score of reporters an up-close-and-personal look at Office 97 and future Windows enhancements. It looks as though Microsoft is finally ready to cut the 16-bit cord and abandon backward compatibility. Win9X will use only 32-bit APIs and finally run great on a Pentium Pro.

Event two

Nothing's better than a robust OS running on a robust platform. Predicting the rise of Entertainment PCs, the Redmond Crew's bulking up on audio muscle, licensing 3-D sound tech for future versions of DirectX, the Microsoft multimedia drivers that include Direct 3D, DirectDraw, DirectVideo, and DirectAudio.

Bobby hears that Microsoft is getting the technology from a major player in consumer audio. He doesn't like to report what he doesn't know, but I was at the Compaq rollout of new consumer PCs and got a chance to talk to the fellas from Harman. Outwardly, they were talking team play with Compaq, but they're obviously in the game for the individ-

ual competition. One Harman rep told me the audio company could sell its technology and awesome-sounding speakers as a free agent after about a year of playing with Team Compaq.

That time-frame gives Microsoft just enough time to put the finishing touches on Office 97 and a new publishing product that will make Mr. Gate's vision of active home pages an easy reality. Using the media-enabled applications, consumers will be able to create Web pages with streaming audio and other active media elements.

Event three

Frustrated by the gains of opposing teams, eternal competitor Gates reportedly snapped at reporters hounding him about third-party APIs that are adopting Netscape APIs. Microsoft is working on its own browser APIs, but long-time allies are teaming with Netscape before Microsoft can even take the field. The APIs let apps such as word processors connect and print to the Internet. Apparently, agents for Corel are talking to the front office at Netscape, and the two are close to a deal. If Bill is right, though, Netscape better score while the field is open. Mr. Microsoft made a

point to position Netscape as a "middleware" company. He then reminded the assembled press critters that, historically, middleware companies do not last long. Any lead Netscape has, Microsoft hopes to erase in the home stretch, or — to quote the coach — "What part of the fact that Microsoft owns Windows don't you understand?" Spoken like the Gipper.

Meanwhile, at the real Olympics, NBC's Olympic site (http:// www.olympic.nbc .com) took a beating from a hacker who, tapping the chat room's capability to accept HTML code, plugged in a URL to hot-sex.com and a pornographic photo. Needless to say, the folks talking about women's gymnastics took offense. The prankster was blocked from the chat, then his ISP slam-dunked his account.

THE STRAINS of the nation's anthem are still ringing in my ears. "Bobby," I told my hero, "you scored a gold. See you next week."

Make like an Olympian: win a Cringely mug. Call (415) 312-0555; fax: (415) 286-2775; or send e-mail to cringe@infoworld.com.